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NATIONAL REGISTER EVALUATION OF SEWERAGE PUMPING STATION B NEW ORLEANS, LOUISIANA

Final Report

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Sewerage Pumping Station B was constructed in the first decade of the twentieth century in New Orleans. It was built in an architectural style that is best described as "Mediterranean". It represents an early example of this style in New Orleans, and it is one of the original structural components of the New Orleans sewerage system. The four pumps it houses at present are all historic. Two of these are 'non-clog' Wood Trash Pumps which were installed in ca. 1930. Pumping Station B exhibits integrity, and it is a significant example of architecture and of engineering. Also, the pumps it houses are significant because of their age and function. Therefore, Station B is recommended eligible for the National Register of Historic Places. It is recommended that adverse effect be avoided. If this is not possible, it is recommended that the structure be relocated or that HABS and HAER documentation be prepared.

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REPLY TO
ATTENTION OF

August 6, 1992

Planning Division
Environmental Analysis Branch

To The Reader,

This cultural resources effort was designed, funded, and guided by this office as part of our cultural resources management program. Documented in this report is an historical, engineering, and architectural assessment of Sewerage Pumping Station B, an original component (circa 1907) of the New Orleans sewerage system. This property may be impacted by the proposed replacement of the Inner Harbor Navigation Canal (IHNC) Lock.

The primary objective of the research was to evaluate the eligibility of Sewerage Pumping Station B for inclusion in the National Register of Historic Places. We concur with the contractor's conclusion that the property is eligible under criterion a for its associative significance, and also under criterion c for engineering and architectural significance.

This report is only one of several studies concerning the impacts of the proposed new IHNC Lock on historic properties. The results of this study, along with those of others completed or underway, will serve as the bases for consultation with the Louisiana State Historic Preservation Officer and the Advisory Council on Historic Preservation pursuant to 36 CFR Part 800. The anticipated result of this consultation will be a Memorandum of Agreement which specifies the mitigation measures to be implemented for this project.

We compliment the contractor on an excellent job. The report provides a concise, yet thorough, historic context for the pumping station.

Michael E. Stout
Authorized Representative
of the Contracting Officer

R. H. Schroeder, Jr.
Chief, Planning Division

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CHAPTER 1
INTRODUCTION

This volume presents the results of a study undertaken to determine the National Register eligibility of Sewerage Pumping Station B. The structure is located in Square 420 of New Orleans. This is the block bounded by Jourdan, Marais, St. Claude, and Sister Streets. It was built during the first decade of the twentieth century, and represents one of the original components of New Orleans' sewerage system.

The study is necessary because the New Orleans District Corps of Engineers is considering modifications to the Inner Harbor Navigation Canal (IHNC). Those modifications have the potential to adversely affect the property. Several other studies have been completed or are in progress to assess impacts to other historic properties in the same area. Because only the Station B component of the New Orleans' sewerage system is subject to impact, the NRHP status of the system as a whole was not evaluated.

This report summarizes the results of archival research, including architectural and engineering aspects of the structure, and of on-site evaluations of Station B. It recommends that Sewerage Pumping Station B be considered eligible for inclusion in the National Register of Historic Places. It also recommends that plans for modifications to the IHNC be designed to avoid destruction of this property, if possible. Alternatively, it is recommended that Station B be relocated in such a way that its historic integrity is maintained. If these options are not feasible, then it is recommended that Historical American Building Survey and Historical American Engineering Record documentation be prepared.

CHAPTER 2
OVERVIEW OF THE DEVELOPMENT OF SEWERAGE SYSTEMS IN OTHER AMERICAN CITIES

Ancient Rome was one of the earliest cities to develop a sewer system. However, most residences were not connected to Rome's great underground drains. The situation was similar in European and American cities until the nineteenth century. Human excreta were excluded from London's sewers until 1815, from Boston's until 1833, from Philadelphia's until 1850, and from the sewers of Paris until 1880. In general, underground sewers were designed to carry storm water rather than human and household wastes (Tchobanoglous 1981:2-3; Cohn 1966:44).

London was among the first of the world's great cities to attempt a solution to the problem of sewage disposal. In 1847, it was feared that a cholera epidemic similar to one raging in India might break out. This stimulated formation of a unified sewerage board to improve sanitation practices. In the same year, London issued an edict that required that all privies drain into the sewers which were already present. Four years earlier, Hamburg, Germany, installed what may have been the first full-scale system for handling sewage (Cohn 1966:44-45).

Prior to 1850, sewerage facilities in most American cities were the same as those in rural areas. Privies or water closets were utilized, and these often emptied into vaults or cesspools. Waste material either soaked into the ground or was hauled away in wagons. Kitchen waste in many cities ran into ditches along the streets. Often, these ditches also carried urine and fecal matter because only inadequate numbers of privies were present in congested districts. For instance, in 1865 there was only one privy associated with a two-story tenement house inhabited by 102 individuals in Cincinnati (Glaab and Brown 1983:77).

American urbanites began to confront sanitation problems forcefully in the mid-nineteenth century. The quality of life and the health of most city dwellers was threatened by a lack of sanitation. There was no garbage collection. Excrement and other filth lay in the streets and gutters. Many cities had no pure water supply, and smoke from their factories polluted the air. Epidemics decimated urban populations. Many Americans blamed the unhealthy conditions of city life on human infirmity. The native poor and new immigrants also

became the scapegoats for these problems (Schultz and McShane 1978:397-398; Baudier 1955b:11).

In 1849, New York City created a municipal department of sewers. At that date, the city had only 70 miles of sewers. Eight years later, there were 158 miles but these served only about 1/4 of the city. In 1866, a cholera epidemic stimulated New York to organize a Metropolitan Board of Health. One aspect of its sanitation program was to require the disinfection of privies, indicating that the sewerage system was far from complete by that date (Glaab and Brown 1983:77-78).

In 1857, a report was issued concerning poor sanitation conditions in Philadelphia. The report urged that "There should be a culvert on every street, and every house should be obligated to deliver into it by underground channels all ordure or refuse that is susceptible to being diluted." Construction of Philadelphia's sewer system began shortly thereafter. Brooklyn constructed sewers designed for the transport of sewage between 1857 and 1859 (Cohn 1966:47).

Through the 1870s, private vaults and cesspools were still in use in most American cities. In 1877, there were approximately 82,000 such facilities in use in Philadelphia, 56,000 in Washington, and 30,000 in Chicago (Glaab and Brown 1983:172).

Although privies were still in use in Chicago by 1877, that city had begun to construct a sewerage system in 1871. As part of the effort, the direction of flow of the Chicago River was changed so that it ran to the Illinois River rather than into Lake Michigan. Despite Chicago's efforts, conditions in 1880 were apparently similar to those in New Orleans in the same year. The Chicago Times (quoted in Glaab and Brown 1983:172) reported in that year that

> The [Chicago] river stinks. The air stinks. People's clothing, permeated by the foul atmosphere stinks... No other word expresses it so well as stink. A stench means something finite. Stink reaches the infinite and becomes sublime in the magnitude of odiousness (Glaab and Brown 1983:172).

Many Southern cities instituted comprehensive efforts to solve the problems of sewage disposal only after 1878. A yellow fever epidemic in the Mississippi

Valley in that year stimulated an intense concern among business leaders about public health in a number of urban centers. The epidemic resulted in 20,000 deaths and the loss of hundreds of millions of dollars in business revenues. Earlier in the nineteenth century, outbreaks of yellow fever, as well as cholera and smallpox, were recognized as having an adverse economic effect in addition to representing major causes of mortality. However, the diseases were often viewed simply as part of doing business in cities which were located in inherently unhealthy areas (Ellis 1969a:197-198, 203-207).

By 1880, Lexington, Kentucky, had only a few stone sewers that emptied into a creek. Augusta, Georgia, had drainage sewers that also were used for sewage disposal. Macon, Georgia, had only a few sewers, and these discharged into a swamp just outside the city limits. Montgomery, Alabama, had only inefficient brick and wooden mains. Baltimore, Maryland, had only twelve miles of storm sewers to serve the entire city and lacked any plan for sewage disposal (Larsen 1985:122). In that year Baltimore's mayor stated that

> The city of Baltimore requires a system of sewerage. The continuance of the plan of digging the cesspools now honeycombing the surface of the ground upon which the city is built - these being on an average about one to each of its eighty thousand houses - must be discontinued if the health of the community is to be considered... (Mayor F.C. Latrobe, quoted in Larsen 1985:122).

The 1878 outbreak of yellow fever, which stimulated much of this concern in the American South, began in New Orleans. The disease was introduced to the city by passengers on ships from South America and Caribbean ports. The first cases were unofficially reported as early as May, but no official reports were filed until July. At that time a cluster of cases appeared in one of the more affluent and cleaner neighborhoods of New Orleans. Only the French language newspapers were reporting these incidents. Nevertheless, rumors of the presence of the disease spread, and residents of the city panicked. By August, approximately one-fifth of New Orleans' population had fled, and in doing so they spread the disease to other Southern cities. Many cities invoked a quarantine, but New Orleanians still managed to find refuge there. When the first case was

reported in Memphis, a "human stampede" resulted. Less than half of Memphis' population of 48,000 remained in that city three days later (Ellis 1969b:346-347).

In 1879, business leaders in New Orleans formed the New Orleans Auxiliary Sanitary Association, largely in response to the 1878 epidemic. The motto of the organization was "Public Health is Public Wealth." Later in that same year, an Auxiliary Sanitary Association was also formed in Memphis. In that city, the association undertook public works that included employing laborers to clean streets and alleys and to empty privies. A public latrine project was also begun. In 1880, a special tax was granted by the Tennessee legislature, and Memphis employed the noted sanitary engineer George E. Waring, Jr., to design a system for sewage and storm water drainage. Waring was the leader of a national crusade against inadequate sewage disposal methods in the United States. He had attributed the 1878 yellow fever epidemic to filthy conditions in cities, including Memphis, which stimulated that city to retain his services. By 1890, Memphis' system of 4-1/2 miles of privately owned sewers had been expanded to 80 miles. Although, the system was inadequate and did little to improve conditions in areas inhabited by those of lower socioeconomic status, the effort was an important beginning for publicly funded sanitation efforts in the urban South. In fact, Memphis' effort appears to have stimulated a national boom in sewer construction (Ellis 1969b:352-353; Glaab and Brown 1983:172-173; Larsen 1985:124).

Atlanta's efforts to deal with the sewage problem had begun slightly earlier than those of Memphis. The main trunks of Atlanta's system were constructed by the post-war Reconstruction government. However, by 1880 there were only seven miles of sewers which followed no plan. They were intended primarily as conduits for storm water. When yellow fever broke out in Jacksonville in 1888, Atlanta was stimulated to expand the system. By 1894, there were 54 miles of trunk, branch, and lateral mains, and many public buildings and residences were connected to the system (Ellis 1969a:210, 1969b:358-359).

Chapter 3 of this report summarizes New Orleans' efforts to design and build a comprehensive sewerage system. Although some construction began in the 1890s, it was not until the formation of the Sewerage and Water Board in the early 1900s that these efforts were successful. New Orleans, then, was one of the last of

the United States' great cities to develop such a system. However, New Orleans was one of only two large American cities (Baltimore was the other) in which engineers had the opportunity to design a complete sewerage system without any necessity for utilizing existing structures (Metcalf and Eddy 1930:17).

CHAPTER 3
HISTORY OF NEW ORLEANS' SEWERAGE SYSTEM

Since the founding of New Orleans in 1718, two of the most fundamental problems faced by its citizens were drainage and the sanitary disposal of sewage. Until the mid-1890s, these problems were viewed as a single issue. Neither problem was adequately addressed during the first 175 years of the city's history.

The plan for the village of New Orleans was created by the engineer, Pierre Le Blond de la Tour, and his assistant engineer, Adrien de Pauger. The plan called for fourteen squares extending along the river with a depth of six squares back from the river. Each square was encircled by a ditch and the whole city was surrounded by a canal. The flow from the ditches around the squares fed into two large ditches which emptied into the canal. The canal, in turn, emptied into the swamp. A map dated 1728 shows another drainage ditch at the approximate location of present-day St. Claude Street. The ditch was supposed to empty into Bayou St. John, but extended only as far as the current Dumaine Street bridge. This drainage system was totally inadequate. During heavy rain storms, the streets were completely flooded and each square became an island (Baudier 1954a:14-15).

Little was done during the French colonial period (1718 to 1769) to improve sanitary conditions. Some individuals built cesspools, but generally raw sewage ended up in the open gutters. Drainage and flood protection, although inadequate, received more attention from the government. During the term of Governor Etienne de Perrier (1725-1732), a levee extending eighteen miles upriver and downriver from the city was erected for flood protection (Baudier 1954a:15, 1954b:10).

The Spanish were just as ineffective in improving New Orleans' sanitary conditions during their rule (1769-1800). Governor Estevan Miro, whose administration lasted from 1785 to 1791, recognized the unhealthy situation and called for an "improvement of sanitary conditions... for proper drainage of the streets, for preventing hogs from running about the streets, against keeping too many dogs and for the removal of dead animals." However, little was done to solve these problems.

Francisco Luis Hector, Baron de Carondelet, served as the Governor of Louisiana from 1792 to 1797. He constructed the Carondelet or "Old Basin" Canal which ran from Bayou St. John to the city. The canal, which was built in 1795, was intended to improve drainage and sanitary conditions as well as to provide a better route for shipping goods from the lakeshore to New Orleans. By the early 1800s, however, the canal was choked with weeds and debris and was impassable at some points, except by pirogue. The Carondelet Canal thus did little to alleviate the city's unhealthy conditions (Baudier 1954b:10, Garvey and Widmer 1989:88,229).

Sporadic efforts were made in the early American period to improve drainage and sanitary conditions, but these also met with little success. During the administration of Mayor Louis Philippe de Roffignac (1820-1828), a canal was dug in the rear of the American Quarter for drainage purposes. This canal was later developed into the Melpomene Canal. Poydras Canal was dug through the middle of Faubourg Saint Marie, at the location of present-day Poydras Street. This canal became clogged with weeds and filth and fell into disuse. The Marigny Canal handled drainage below the city (Baudier 1955a:24).

During the 1830s and 1840s, yellow fever and other diseases ravaged New Orleans. Nevertheless, city officials did little to improve sanitary conditions. Open gutters became clogged with excrement and other filth. Their stagnant waters became covered with green slime in the hot summer months. Most houses had uncovered cesspools which overflowed during heavy rains and floods, leaving fecal matter in the yards and streets. Ineffectual efforts to flush the gutters were sometimes undertaken by means of sluices in the levees during river rises. However, the gutters were never entirely drained. Gibson, quoted in Baudier (1955b), reports in his Guide and Directory of Louisiana of 1838 that the annual mortality rate for New Orleans during this period was approximately 3,800 in "ordinary years" (Baudier 1955b:11-12).

One attempt that was made to improve the drainage in New Orleans occurred in 1835 when a twenty year charter was granted to the New Orleans Drainage Company. The charter made the company responsible for draining and reclaiming the land bordered by the upriver limits of the Suburb Livaudais, the line of the New Canal to Lake Pontchartrain, along the shoreline of the lake to Bayou Cochon and then a straight line to Fisherman's

Canal and on down to the Mississippi River. This monumental task was to be accomplished through a series of canals and ditches. Ditching was begun in the rear of the Vieux Carre. In addition, the Canal Girod or Orleans Canal became the primary draining artery with a pumping station located at its junction with Bayou St. John (Baudier 1955b:17; Advisory Board 1893:48).

The New Orleans Drainage Company received some important recommendations concerning its endeavors from George T. Dunbar, the Engineer of the State of Louisiana. In 1840, the President of the Bureau of Public Works asked Dunbar to survey and make a topographical examination of the back section of the city. Dunbar reported his findings to Felix Garcia, the president of the drainage company, on February 17, 1840. This was the first drainage plan for the city that was based on New Orleans' topography and environmental conditions. It was also the first time that underground drainage was recommended for New Orleans. Dunbar stated in his report that

> No city in the Union needs underground drains more than New Orleans, and none where it could be done more easily and more cheaply, and still, it is the only city of any importance in which underground drains have not been used (Baudier 1955b:17).

Dunbar also reported that the sizes of the current drains and gutters were too small to carry off the necessary amounts of water. Their size should be increased. He encouraged the drainage company to use more machines such as those it already had in order to lift the water that was drained off the streets. He pointed out that other places such as Holland utilized these machines very effectively (Baudier 1955b:17).

The specific recommendations outlined in Dunbar's report were intelligent and succinct. He proposed that two underground drains, five feet deep by four feet wide, leading to the swamp canal be placed under Canal Street. These would drain Canal Street and its side streets as far as Customhouse Street. Two underground drains of the same dimensions under Bienville Street would drain from Customhouse to Conti Streets, terminating at the Claiborne Canal. Two more underground drains under St. Louis Street would also join the Claiborne Canal and drain from Conti to Toulouse Streets. Orleans Street would also have two

underground drains which would service the streets adjacent on either side of it. This pattern of drains would be continued for the other streets, taking into account their slopes. These underground drains would empty into the Claiborne Canal which would feed into the Orleans or Girod Canal. Dunbar further recommended that canals be located on streets running parallel to Claiborne Avenue in the area beyond that avenue up to Grand Avenue or Broad Street (Baudier 1955b:17-18).

Unfortunately, New Orleans' city officials were not impressed by George Dunbar's report and did not act upon it. Following the panic of 1837, the city had little money for such a project. The public opposed the plan because mortgages in favor of the New Orleans Drainage Company would be placed on property to finance the undertaking. The drainage company finally dissolved because of the hard economic times (Baudier 1955b:18).

For the next fifty years all efforts to drain New Orleans met with failure. As late as the mid 1880s, the city's main commercial area was frequently flooded, occasionally with as much as two or three feet of water. Some portion of New Orleans was generally flooded or under water prior to 1893 (Sewerage and Water Board 1962).

The challenge of draining the city was not met because of lack of money, the apathy of city officials, and public opposition. Louis H. Pilie, the City Surveyor, submitted a drainage plan to the Common Council in 1857. He concentrated on draining the land behind Claiborne Avenue. Drainage would flow into Lake Pontchartrain. The Civil War blocked any efforts to carry out Pilie's proposal. In 1871, the state legislature authorized the Mississippi and Mexican Gulf Ship Canal Company, a private firm, to correct New Orleans' drainage problems. This company's initial project had been to dig a canal from St. Bernard Parish to the Gulf of Mexico. The firm managed to dig thirty-six miles of canals in New Orleans, but these did not solve the city's drainage problems. W. H. Bell, the City Surveyor in 1876, proposed a drainage plan that would utilize the canals already in service and place pumping stations along the lake front. G. W. R. Bayley in 1878 had a drainage proposal that incorporated the use of Bayou Bienvenue (Advisory Board 1895:47; Baudier 1956a:18, 1956b:16).

Dr. Joseph Holt, a leading advocate of a city-wide sewerage system, provided a graphic description of sanitary conditions in New Orleans in 1880:

> During wet weather these vaults or sinks [privies], quickly fill with water and overflow, flooding yards and gutters with odure. Under a sun almost tropical one-half the year, this ferments, and emits a most abominable stench...
>
> While in wet seasons these vaults are flooded, in dry weather, as before stated, they are largely emptied by their fluid contents soaking into the ground, thus saturating the soil upon which we live with human excrement. In this respect it may be properly stated that the people have a huge privy in common, and that the inhabitants of New Orleans live upon a dung-heap...
>
> The present system of removing this matter from New Orleans, as can be seen at all times, is by what is supposed to be air-tight barrels and carts. But it is simply a supposition for when you pass one of the wagons loaded with these barrels the stench is unbearable, and the apparatus for filling these carts or barrels, are carried through the streets just as they are drawn from the privies without being washed off, and the odor from them in our streets are very disagreeable... (Dr. Joseph Holt, quoted in Roy 1880:8,15).

In 1881, the city had an opportunity to contract with the newly established New Orleans Drainage and Sewage Company to construct a drainage system and an underground sewerage system connected to residences. Public opinion rang out against the proposal. A petition citing some very strange arguments was sent to Mayor Joseph Shakspeare asking him to veto the measure. The petitioners believed that the sewerage system would be bad for public health. They argued that the soil was too soft for the installation of pipes. The pipes would sink, become clogged with filth, and then crack, thereby emitting harmful gases into the air. At this time, such gases were frequently blamed for the outbreak and spread of epidemic disease. The petitioners totally ignored

the fact that these very gases were already being released into the air from uncovered cesspools and open gutters. Despite opposition, Mayor Shakspeare approved the measure. However, the sewerage plans were never carried out (Baudier 1956b:16).

The lack of a public sewerage system caused some private and public enterprises to install their own underground sewer lines which emptied into the Mississippi River. The St. Charles Hotel began this movement in 1880. The D.H. Holmes Company soon followed suit. A pump installed in the back of the Holmes store forced the sewage through the pipe. Charity Hospital was connected to the Holmes line. The Jesuits' church and the adjoining college also installed private sewer lines. This trend would continue up to the turn of the century. Eventually, the Cotton Exchange, A. Baldwin, the Boston Club, the Morris Building, and the Louisiana National Bank were connected to the St. Charles Hotel's sewerage lines. The Board of Trade also had a private sewerage system which was utilized by Vonderbank's Hotel, the I.L. Lyons Company, and the Masonic Building. Other establishments which had their own sewer lines included the U. S. Marine Hospital, the Louisiana Brewery, Hernsheim's Cigar Factory, the Planters' Refinery, the Louisiana Refinery, Jackson Brewery, the U.S. Mint, G. W. Dunbar's Sons, St. Mary's Boy Asylum, and the Commercial Soap Works (Baudier 1956c:11, 1956d:11).

The 1890s was a crucial decade in terms of public utilities for New Orleans. In 1893, prominent citizens of New Orleans came to realize that an adequate drainage and sewerage system and an adequate supply of drinking water were necessary for further economic growth (Sewerage and Water Board 1962). A drainage report issued that year referred to "the recent establishment of a sewerage system" and described its function as the removal of solid waste from buildings to an appropriate outfall. This was a significant distinction because sewerage was now seen as a separate system from drainage. The question of drainage for the city now involved only the removal of rain water and ground water saturating the soil. The New Orleans Drainage Commission was organized in 1896 to address this issue (Advisory Board 1895:15).

The sewage problem was to be tackled by a private firm. The New Orleans Sewerage Company kicked off the development of its sewerage system for the city with an inaugural ceremony on April 18, 1894. The program for

that ceremony (on file in the Howard-Tilton Memorial Library) indicates that it was held on the north side of Treme Market near the Parish Prison where the project was to begin. Speeches were made by Mayor Fitzpatrick, ex-Mayor Shakspeare, and Dr. Joseph Holt who was the president of the Sewerage Company.

In his speech, Holt praised the achievements and progressive spirit of New Orleans. He pointed out the improvements in public services that had already been realized such as paved streets and electric street lights. He added that the city needed to continue this trend by developing a comprehensive drainage system, a garbage disposal system, and most importantly, a sewerage system. Holt argued that such a system was not only imperative for improving the quality of life of New Orleanians, but also for attracting tourists, industry, and capital investments. In his rather colorful speech, he used exaggerated metaphors to describe the situation of New Orleans:

> This vast municipal body is but the indefinite extension of the body individual, and so of physiological functions and pathological derangements. How speedily would a person pine and perish in his own corruption but for the great sewers inwardly provided...
>
> Look around you now and consider the self-poisoning, the foul and contaminating excreta having no organs of issuance, but pent up in this body politic. Consider this huge animal and heavy feeder; this anatomical compound of 260,000 actively-functioning members, casting out continually, each from itself, the waste and offensive products...
>
> What a gross monstrosity, scarce half made up, is this immense living creature, without those natural passageways for cleansing and keeping pure every tissue and fibre of its own composite organism; and precisely such a mal-formed beast is the city of New Orleans without a sewerage system. No marvel that offensive odors and disgusting sights repel. No wonder that a high annual death rate, with all of its implied

> sickness and industrial loss, prevails, and all preventible (Dr. Joseph Holt, quoted in the Times-Democrat, April 19, 1894).

Unfortunately, the accomplishments of the New Orleans Sewerage Company did not meet the expectations of Holt and the other advocates of civic improvement. In fact, little progress was achieved on New Orleans' drainage, sewerage, and water supply problems until the solutions to these three problems were undertaken by a single board (Sewerage and Water Board 1962). The New Orleans Sewerage and Water Board was created by Act No. 6 of the Extra Session of the Louisiana State Legislature in 1899. The board was comprised of the mayor of New Orleans, the Commissioner of Public Finances, the Commissioner of Public Utilities, the Commissioner of Public Property, two members of the Board of Liquidation (City Debt), and seven property taxpayers (one from each municipal district) who were each appointed by the mayor for an overlapping term of twelve years. On June 6, 1899, the property taxpayers of New Orleans approved a special tax of two mills on the dollar for forty-three years, beginning that year. The funds generated from this tax were earmarked for three goals: (1) public acquisition of a waterworks system for the entire city, including the Fifth District, and also a purification system for the water supply; (2) construction of a free sewerage system throughout the city, including the Fifth District; and (3) completion of the public drainage system for the entire city which was then under construction (Sewerage and Water Board 1940:82; Louisiana State Legislature 1899).

During this period, a private company which had been granted a sewerage franchise in 1892 went into receivership. The city purchased its works and rights in 1902. By June, 1903, a series of contracts for construction had been awarded (S&WB 7:6).

George G. Earl, General Superintendent of the Sewerage and Water Board of New Orleans, gave a report on the city's drainage, sewerage and water supply at the 54th Annual Session of the American Medical Association. He pointed out that although the drainage system was partially completed, there was no sewerage system. Sewage disposal methods remained unchanged since the French colonial period. Fecal matter was put in shallow, open pits with porous bottoms. Occasionally, these pits were partially emptied out by sanitary

excavating companies that dumped the contents into the river below the city limits. The pits smelled especially bad after these cleanings. All other liquid household wastes ended up in the gutters. Earl stated that the drainage system could not accommodate sewage disposal during a dry weather flow because the subdrainage canals would be too shallow to allow a proper fall for house connections to enter them, and would also be so large and flat that the small stream of wastes would not flow away, but would lie there and putrefy. Secondly, the outfall canals of the drainage system would be turned into long, open cesspools in dry weather (Earl 1903:7-9, 15).

The Sewerage and Water Board planned to build three sewerage pumping stations from which waste would be pumped into the Mississippi River. These were Station A on Orleans Street, Station B near St. Claude Street in the Ninth Ward, and Station C in Algiers. The centrifugal pumps located in these stations would drive the sewage into cast iron force mains leading uphill to the river. The maximum lift of any of these stations would be fifty-five feet. Electric generators at Station A would power all of the fifteen intermediate sewage lifts in the system on the east bank (Earl 1903:17). By 1905, construction of the sewerage system had begun. Despite slow progress due to heavy rains, work was underway on Stations A, B, C, No. 14, and No. 15 (S&WB 11:6-8). Stations 14 and 15 were intermediate pumping stations located at the intersections of Marengo and Clara Streets and Palmyra and Rocheblave Streets respectively.

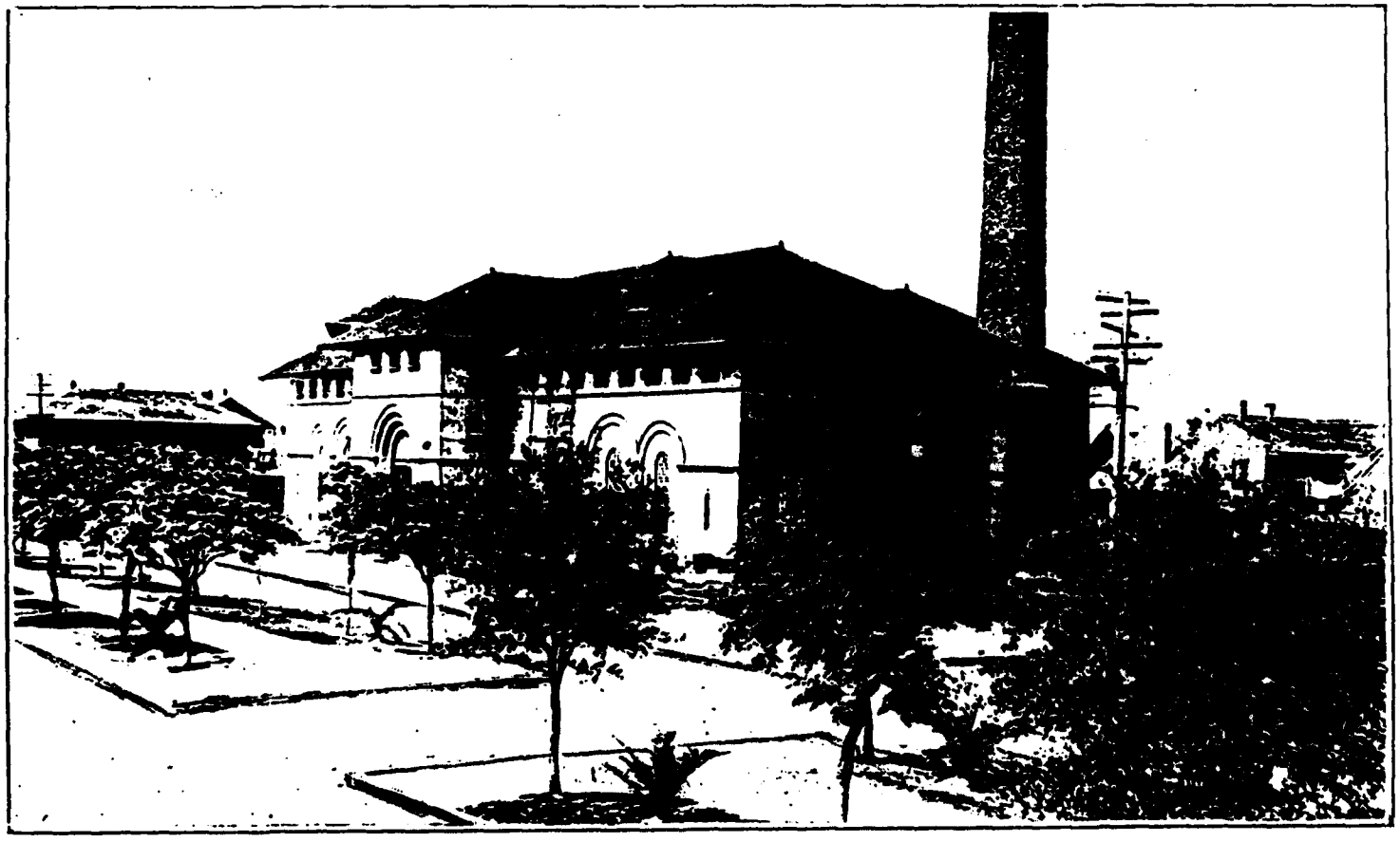
According to Earl's plan for the sewerage system, the pipes would be laid at as low a grade as necessary to move the sewage by force of gravity. A pumping station would be located at the point where the sewers reached eighteen feet. This station would lift the sewage to a level where the sewers could again be built near the ground's surface. The sewage would move on to one of the main pumping stations and be discharged into the river. The Sewerage and Water Board emphasized that there was "nothing experimental about any of the features involved in the plans" (S&WB 12:14).

At the time, two basic approaches to sewer technology were being used in the urban United States. These were the "combined plan" and the "separate system." The combined plan utilized a single pipe system for both domestic sewage and storm water. The separate system had an individual pipe system for each

type of runoff. Many cities with separate systems, however, only constructed sewers for household wastes and had no facilities for underground removal of storm water. New Orleans' separate sewerage system, on the other hand, provided one pipe system for raw wastes and another for storm runoff. This was essential in a city with a subtropical climate and an average annual rainfall of over fifty inches. In other words, New Orleans was the first large city to develop a set of complete plans for a truly separate underground sewerage system. As the Sewerage and Water Board constructed its system, many American and European cities with combined systems were gradually changing over to the separate form of sewer technology (Tarr 1979:308-309, S&WB 12:14).

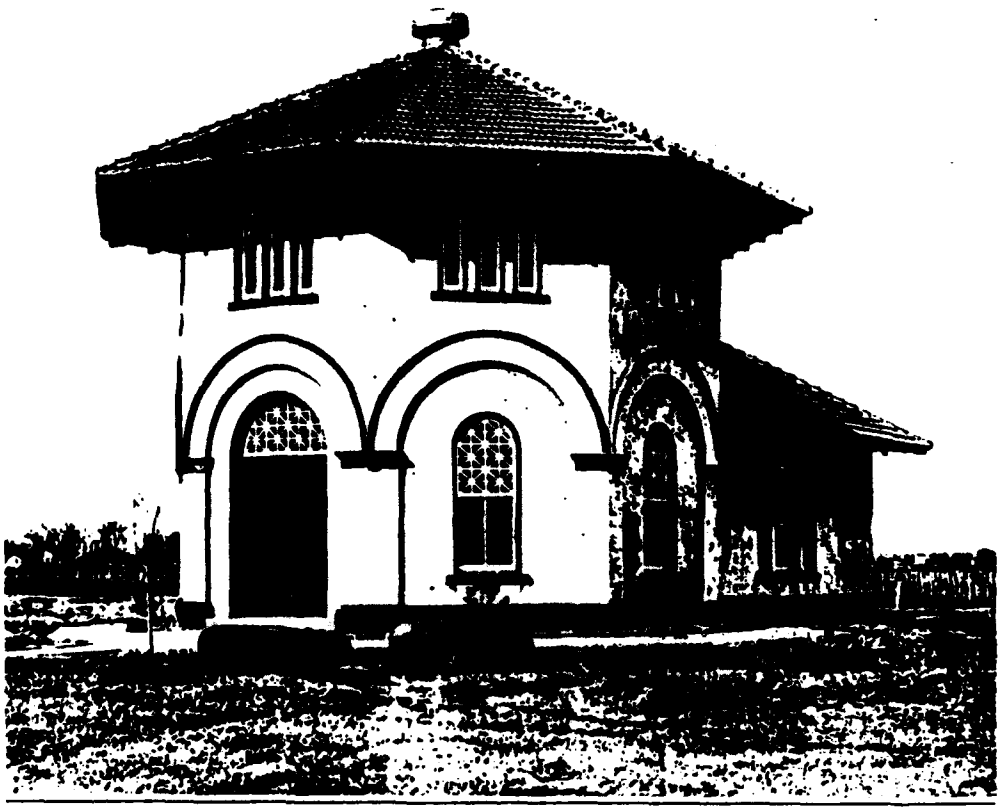
Sewerage Pumping Stations A, B, C, 1, 6, 8, 9, 14, and 15 were completed in 1906. The machinery for A, B, C, 14, and 15 had been put in place. The force mains from Stations A and B had been laid to the Mississippi River. Most of the sewers were put into operation in 1906. The laying of the sewer lines and the construction of the pumping stations were initially undertaken by contractors. In 1908, the Board organized its own work forces to build sewer lines because it was less expensive. The sewerage system was ninety percent complete by January 1, 1909. At this date there were 304.48 miles of sewers. The system had two steam driven and one electrically driven pumping stations discharging into the river, and had six intermediate lift stations (S&WB 13:17-18, 18:17,19). Figures 1, 2, 3, 4, and 5 show Stations A, B, C, 14, and 15 as they appeared in 1909. Figure 6 is a map by the Sewerage and Water Board showing the configuration of the system in 1910.

In its first decade, the sewerage system was steadily expanded to serve existing neighborhoods and new subdivisions. By the end of 1910, New Orleans had 10,793 house sewer connections serving 13,755 households on both riverbanks. This accounted for approximately one-fifth of the premises in the city. The rest still relied on open vaults or cesspools. Compulsory ninety-day notices went out in 1912 requiring people to get sewer hook-ups. Over 1500 notices went out that year. The eventual goal was to connect 1100 new premises every month to the sewer lines. The Board's directors also authorized increased capacity for six re-lifting stations. As soon as possible, new pumps were to be designed to allow rags and other debris to pass through the system without causing obstructions. Progress continued. In the years 1914 and 1915, fewer than



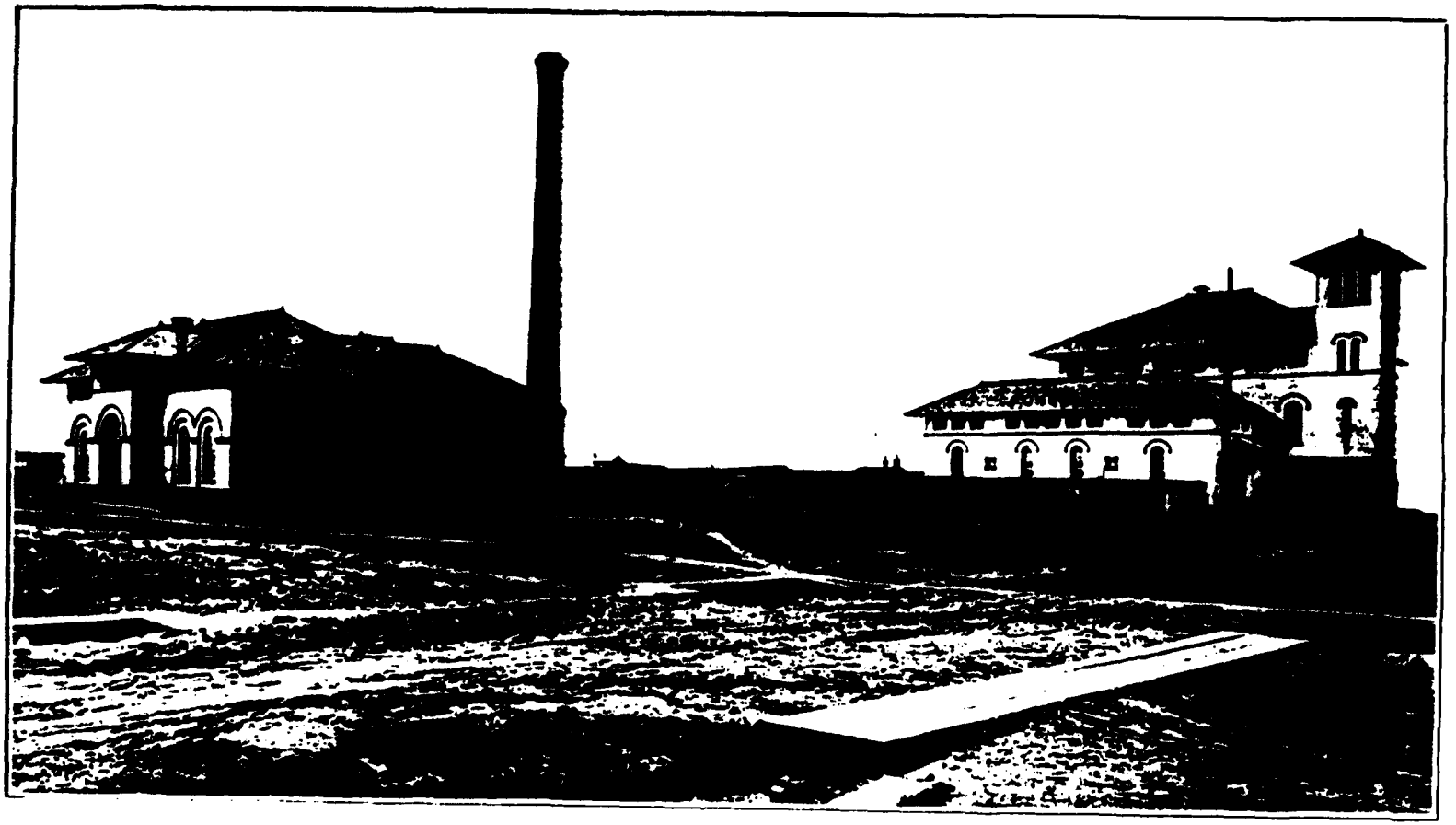
MAIN SEWERAGE PUMPING STATION "A"
Intersection St. Ann & Orleans Streets

Figure 1. Photograph of Pumping Station A, reproduced from the Sewerage and Water Board's twentieth (1909) semi-annual report.



SUB-SEWERAGE PUMPING STATION "B"
Intersection Jourdan Ave. & St. Claude St.

Figure 2. Photograph of Pumping Station B, reproduced from the Sewerage and Water Board's twentieth (1909) semi-annual report.



STATION "C"– SEWERAGE AND WATER– ALGIERS.

Figure 3. Photograph of Pumping Station C, reproduced from the Sewerage and Water Board's twentieth (1909) semi-annual report.

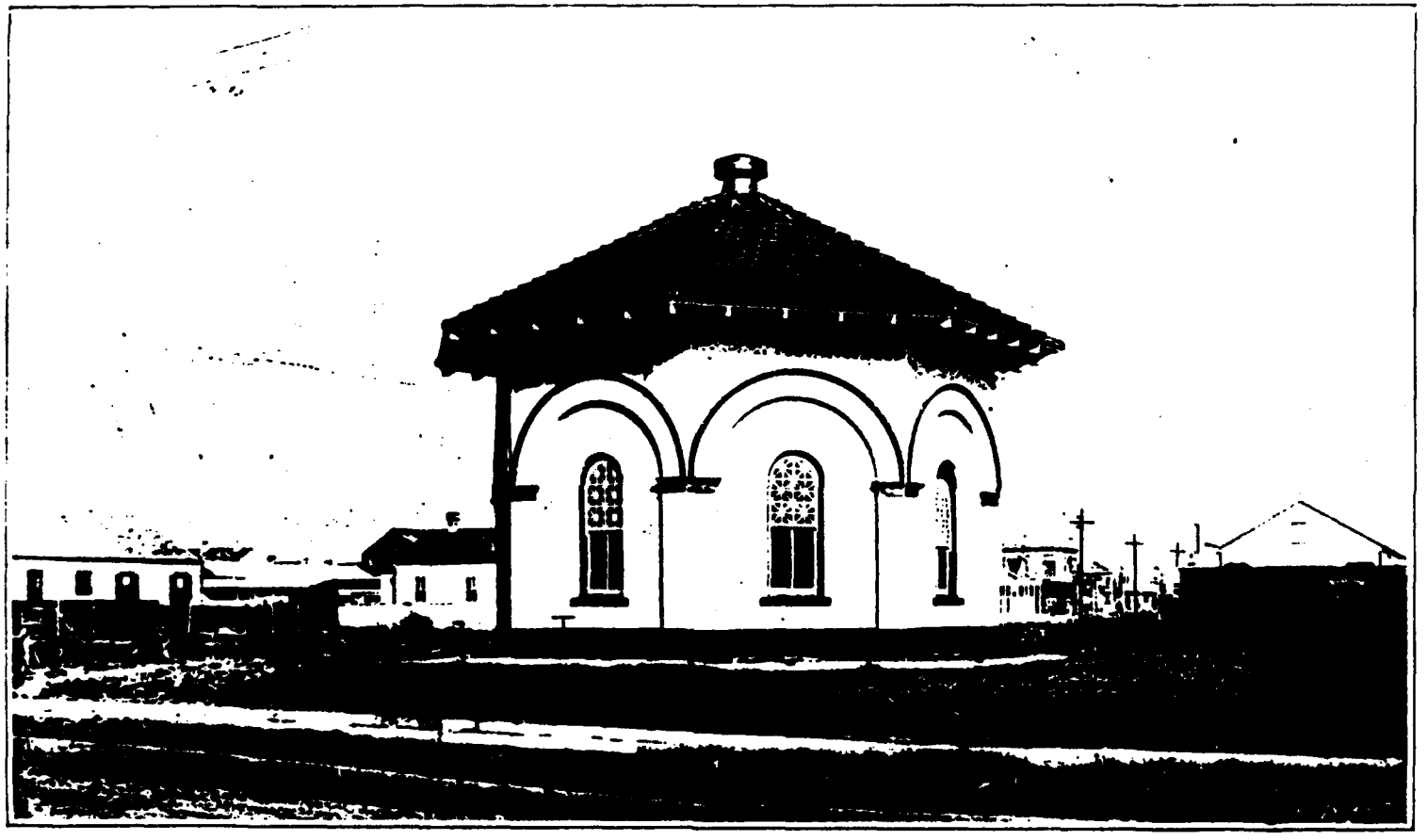


Figure 4. Photograph of Pumping Station No. 14, reproduced from the Sewerage and Water Board's twentieth (1909) semi-annual report.

SUB-SEWERAGE PUMPING STATION NO. 15.
Intersection Palmyra & Rocheblave Streets

Figure 5. Photograph of Pumping Station No. 15, reproduced from the Sewerage and Water Board's twentieth (1909) semi-annual report.

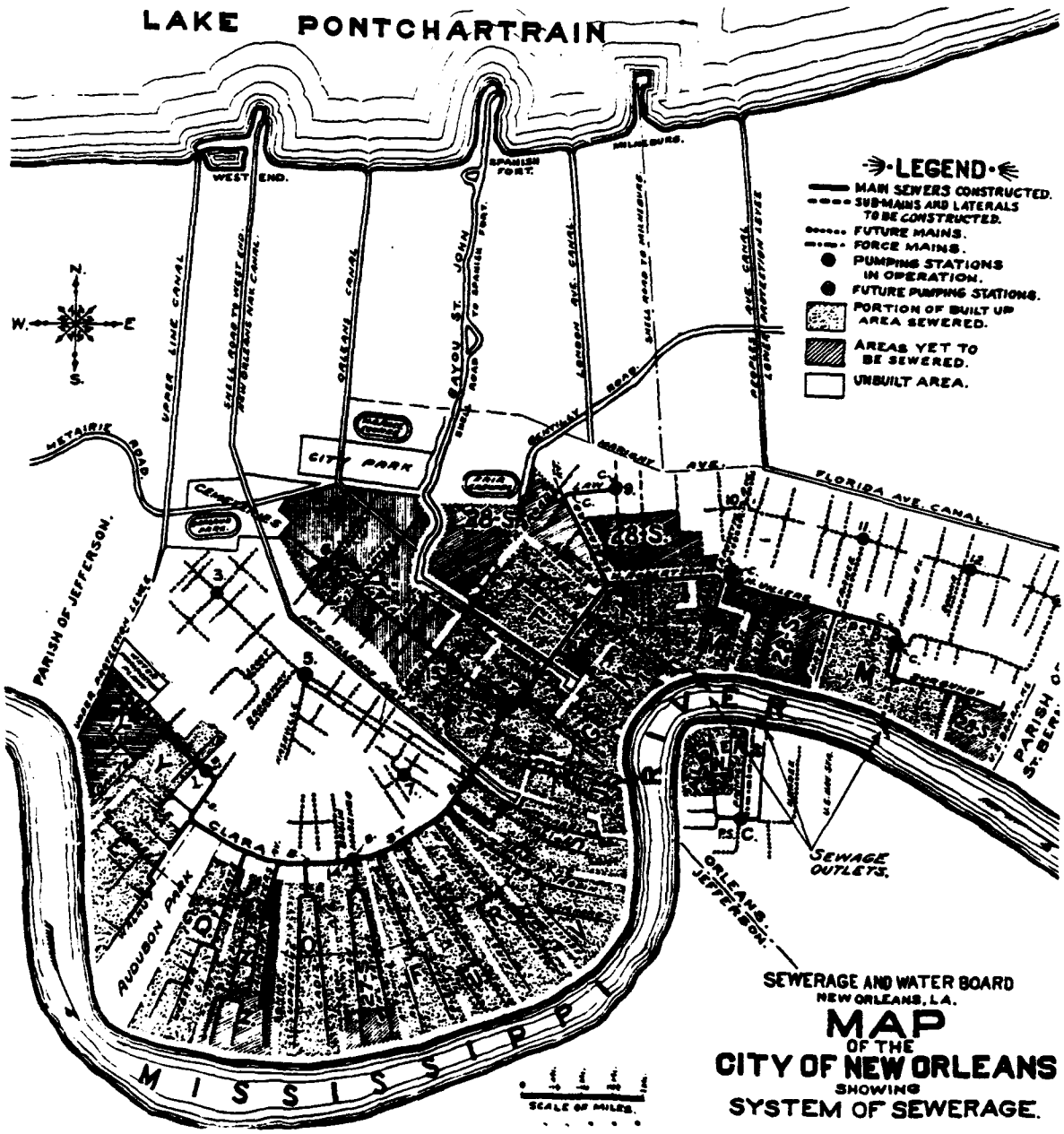


Figure 6. Map of the New Orleans sewerage system in 1910, reproduced from the Sewerage and Water Board's twenty-first (1910) semi-annual report.

twenty-five miles of sewers were built, but most of these were larger and deeper than previous lines. Construction of Sewerage Pumping Station 5 at Erato and Dorgenois Streets began in 1915 and was completed the following year. The number of house sewer connections totalled 46,396 at the end of 1915 and these served 67,013 premises (S&WB 22:19, 26:33-34, 30:38, 32:69-70, 34:31).

The construction of the Inner Harbor Navigation Canal, which began in 1918, impacted the city's sewerage system, particularly the tributaries of Sewerage Pumping Station B. The Villere Street main sewer, which carried the sewage from an area between Lafayette and Jourdan Avenues to Station B, was cut off by the canal. The plans were to restore this egg-shaped, brick sewer by building two thirty-inch siphons under the north end of the canal's locks. The twenty-inch cast iron sewer discharge main running from Station B down Jourdan Avenue was removed to make way for the forebay of the Inner Harbor Navigation Canal. The main was relocated to the lake side of St. Claude Street and continued down Forstall Street, and then followed Chartres Street to the river (S&WB 38:27-28, 40:31).

The 1920s saw further development of New Orleans' sewerage system. Work also progressed on the sewers affected by the construction of the Inner Harbor Navigation Canal. By 1920, there were 53,411 sewer connections serving 77,386 premises. Sewerage Station 3 at Eagle and Olive Streets was constructed and placed in automatic service the following year. Sewerage Station 5 was equipped with two more pumps and motors that year. By 1925, 562.127 miles of sewers were in use. These sewers had 64,870 house sewer connections serving 96,216 households (S&WB 42:33-34; 44:12,85; 52:33).

Expansion of the sewerage system continued during the 1930s despite the Great Depression. In 1930, almost 21 miles of sewers were laid to make a grand total of 619.078 miles. There were 72,280 house sewer connections for 105,581 premises. That year the sewerage system was comprised of Outfall Stations A, B, and C, and eight automatic substations. Three new substations--16, 17, and 18--were soon added. Sewerage Station D began service in 1931 with a small pump. When the intake canals were completed in 1932, Station D began regular operation with its larger pumps (S&WB 62:35, 64:12-13, 66:11).

By 1935, New Orleans sewerage system serviced 110,765 premises with 658 miles of sewers. Eight first lift stations moved the sewage to the main pumping stations. In three cases, a second lift pumping station was utilized to move the sewage along to the main station. All of these stations were electrically powered and automatically operated without any screening of sewage. The four final discharge stations were "A", "B", and "D" on the east bank, and "C" in Algiers. These were driven by electricity, but were also manned by sewerage board personnel. They forced raw sewage through cast iron discharge mains into the Mississippi River. Five years later, in 1940, the system was essentially unchanged, but had expanded to 721.6 miles of sewers serving 117,354 households. By this time, there were ten first lift stations instead of the previous eight. The thirteen secondary stations housed thirty pumps with a total capacity of 310,608,000 gallons of sewage per day. The fifteen pumps in the four discharge stations moved 528,768,000 gallons per day. Pumping Station A alone pumped twenty-one billion gallons of sewage per year. This was enough to create a twelve foot deep lake covering eight square miles. Even at this late date, 1940, the Sewerage and Water Board continued to emphasize the distinctive features which set New Orleans' sewerage system apart from those of most other cities. First, the sewerage system was a completely separate system from that for surface water drainage. Second, the Crescent City's flat terrain required that the sewage travel through various pumping stations (S&WB 72:46, 82:13; Sewerage and Water Board 1935, 1940).

In its 1941 end-of-the-year report, the Sewerage and Water Board wrote of the success of the system it had created:

> The unstable character of the sub-soil in New Orleans and consequent poor foundations of the sewers, in addition to the pumping of this sewerage, are conditions not faced by other cities of comparable size. Yet, the total cost of the operation of the sewer system which amounted to $180,934.00 in 1941 compared to the average for the past ten years, 1931 to 1940 inclusive, of $185,270.00 is a monument to the design and construction of this system (S&WB 83:9).

After World War II, New Orleans' sewerage system expanded to provide service to newly developed

residential areas. Figure 7 is a map by the Sewerage and Water Board showing the configuration of the system in 1950. New lines and new pumping stations continued to be added. However, the only fundamental change to the system occurred in the 1960s. The 1963 Annual Report of the Board referred to 1963 as "A Year of Decision," referring to its resolve to build sewage treatment facilities and thereby end the practice of discharging raw sewage into the Mississippi River. The decision was made in response to pressure from both state and federal agencies. The Board could no longer obtain permits for additional sewer outfalls into the river as long as raw sewage was being discharged (Sewerage and Water Board 1963:1).

Plans called for construction of an initial sewage treatment plant to be built near Florida Avenue in the vicinity of St. Bernard Parish. It would serve the area north of Florida Avenue between Jefferson Parish and Paris Road (Sewerage and Water Board 1963:6). It was expected that the facility would later be enlarged to serve other sections of the city (Sewerage and Water Board 1964:5). In 1966, the Board authorized preparation of plans and specifications for a sewage treatment facility in Algiers (Sewerage and Water Board 1966:5). Costs for the East and West Bank facilities were estimated to be $23,000,000.00 (Sewerage and Water Board 1967:6).

Successful operation of the East Bank treatment facility and plans for its expansion were reported during 1968:

> Completed during 1966 and put into operation was the first unit of the East Bank Sewage Treatment Plant at Florida Ave. and Delery St. *The plant operation marked the beginning of the end to the practice of discharging raw sewage and untreated industrial and other wastes of the city into the Mississippi River* to the detriment of downriver communities and commercial fishery areas.
>
> The capacity of the East Bank plant at this time is 23 million gallons a day, but this will be increased to 138 million gallons. The plant now serves generally that portion of the city north of Florida Avenue between Elysian Fields Ave. and Parish Rd. *Its capacity will be gradually increased to take in all of the*

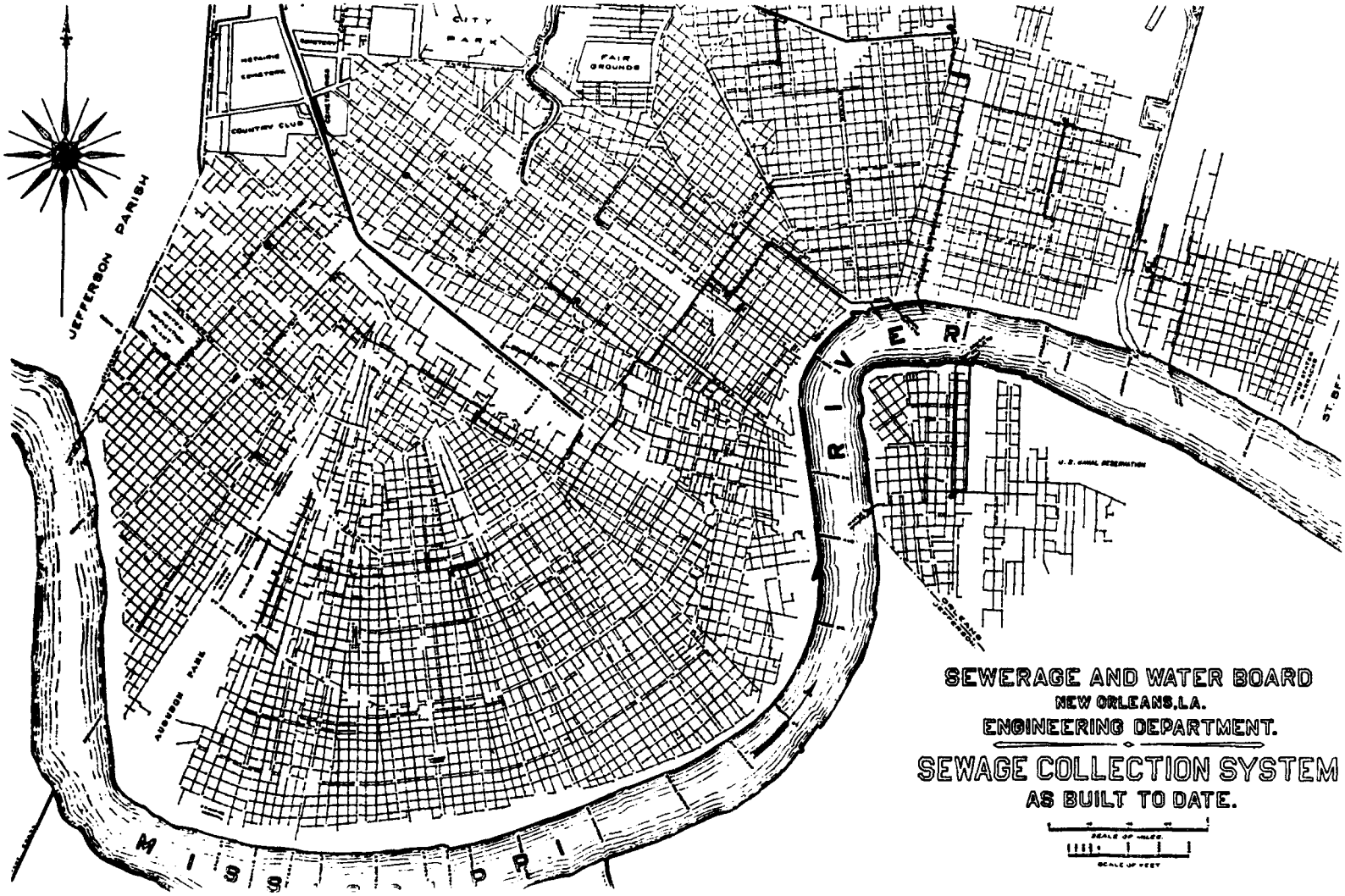


Figure 7. Excerpt from a map showing the New Orleans sewerage system in 1950, reproduced from the Sewerage and Water Board's 101st semi-annual report. Comparison with Figure 6 shows the expansion of the system since 1910.

city east of the Mississippi River (Sewerage and Water Board 1968:6, emphasis added).

CHAPTER 4
DETAILED HISTORY OF CONSTRUCTION OF THE NEW ORLEANS SEWERAGE SYSTEM WITH AN EMPHASIS ON STATION B

This chapter presents an overview of the history of Sewerage Station B. It also presents a detailed history of some aspects of construction of the entire New Orleans sewerage system in order to provide a context for understanding the historic role of Station B in the larger system.

The semiannual report of the New Orleans Sewerage and Water Board (Board) for the period June 30 to December 31, 1900, indicated that specifications for sewerage collection and water distribution systems had been prepared. The Sewerage and Water Board was ready to advertise for bids for construction. It was estimated that it would take seven years to build the two systems, and that the cost would be $9,084,000.00. The Board's goal was to construct the main sewers, sewerage pumping stations, and force mains simultaneously. They estimated that it would take 30 months to build the main sewers and 21 months to build the pumping stations and outlets (S&WB 3:3-4,11).

By June 30, 1901, the proposed sites for the various sewerage pumping stations had been inspected and appraised. However, all of the owners refused the offers made by the Board, which was now recommending expropriation of the various properties (S&WB 4:19).

Specifications had been prepared for a contract that included machinery and appurtenances necessary to operate three high lift stations (designated A, B, and C) and six low lift sub-stations (designated 1, 6, 8, 9, 14, and 15) (S&WB 5:38). The semi-annual report stated that

> Power for the operation of all these stations, except Stations A and C, will be generated by means of steam-driven electric generators at Station A and transmitted by underground cables to the other stations. At Station A the pumping will amount to far more than at all of the other stations combined and will be done by steam-driven pumps... (S&WB 5:39).

On May 28, 1902, advertisements for bids for construction of the sewerage system and pumping machinery were placed in various newspapers and engineering journals. Bids were due on August 12, 1902. This contract would include the pumping machinery for Station B (S&WB 4:3-4).

During this planning period, some complaints had been made about the Board's rate of progress. The Board responded with a description of the magnitude of their undertaking:

> ...when the tax-payers decided to sewer this city of 300,000 population, covering an area of 23 square miles laid out in squares and with street mileage of 700 miles, to complete its water distribution system and supply it with clear water, they projected the largest public works of their character ever undertaken at one time in the United States and this under peculiar and practically untried local conditions (S&WB 5:5-6).

On November 13, 1902, the bid of Camden Iron Co. was accepted for furnishing steam and electrical equipment for the sewerage pumping stations. The amount of Camden's bid was $246,500.00 (S&WB 6:5).

The site selected for Station B was described in the Sixth Semiannual Report:

> The site for pumping station "B," square No. 420... was acquired by expropriation proceedings for $5,500.00, including the improvements, consisting of a good dwelling, barn and outbuildings, which may possibly be utilized in some manner, when the station is established. In the meantime it will be rented as a truck garden (S&WB 6:25).

In April, 1904, the Board recommended that advertisements be placed for bids to construct the foundations and superstructures of the various sewerage pumping stations. The goal was to have these stations ready for installation of machinery being built by Camden. In July, 1904, the Board recommended that the bid of W.M. Wren and Company be accepted. The amount of that bid was $135,063.54, and it was for the foundations for Stations A and C as well as superstructures for

Stations, A, B, C, 14, and 15 (S&WB 10:44,48). By December 31, 1904, the Board was reporting that good progress had been made. Approximately 115 miles of sewers and outlets had been laid and

> the pumping machinery contract (for all of the nine pumping stations required for the relifting of the sewage or its discharge into the river) is well advanced and the buildings and wells for its accommodation are under construction (S&WB 10:56).

During 1903 and 1904, the Sewerage and Water Board had prepared a series of plans and elevations for the various pumping stations. Figures 8, 9, 10, 11, 12, and 13 are excerpts from those drawings which show some of the architectural and engineering details of Station B as it was planned.

On June 30, 1905 the Board stated that "good progress has been made toward the completion of the principal pumping stations... (including) 'B'..." and that 135 miles of mains and pipes had been laid (S&WB 11:8). By December of that year, there were 160 completed miles of mains, and it was anticipated that the system would soon be operational:

> Pumping stations are well under way and by June, 1906, it will be possible to have the connections from the houses to the sewers started and the domestic sewage of the city removed through the new sewers and discharged into the river (S&WB 12:19).

Although progress continued, the pumping stations were not yet on-line by June, 1906. The report of activity through that date stated that "All these stations have been but recently completed and are not yet in operation..." (S&WB 13:4). It reiterated that W.M. Wren and Company was the contractor for Stations A, B, C, 14, and 15.

The thirteenth semi-annual report of the Board provided a photograph of Station B, and the caption for that photograph provided some information about the station's function:

> [Photo] No. 7, shows Sewerage Pumping Station "B" at Jourdan Avenue and St.

> Claude, which pumps the sewage collected from the main sewers from Lafayette Avenue to the Barracks, and forces same into the river through a force main on Jourdan Avenue. This sub-station is a type (although somewhat larger) of sub-stations "14" and "15"..., all operated by electricity generated at Main Pumping Station "A" (S&WB 13:3-4).

The same report provided a good description of some aspects of the architecture of Station A. The description reflects the pride with which the Board regarded its undertaking:

> [Station A is a] ... brick building, stuccoed, upon concrete-steel foundation, in which is located the pits for receiving discharge from the main sewer... This building is covered with red tile, and the stack has a graceful, towering appearance, carrying the smoke from the boilers far above the housetops in the vicinity... (S&WB 13:16).

At the end of 1906, the Board stated that

> ...the machinery and equipment, both steam and electrical, for the sewerage pumping stations has been practically completed at a cost of approximately $246,500.00, there remaining only some tests to be made as to the efficiency of the pumps and the completion of the installation at the several sub-stations (S&WB 14:17).

By that time, some connections with houses were being made, although this was not true for the area served by Station B which was not yet ready and was not anticipated to be in operation "...for two months or longer" (S&WB 14:22).

In June of 1907, the Board reported that all of the stations, including B, were operational:

> Pumping Station "A," which is the main sewerage pumping station... has been in continuous operation during the past six months, not only pumping the sewage from the sewers now connected therewith, but

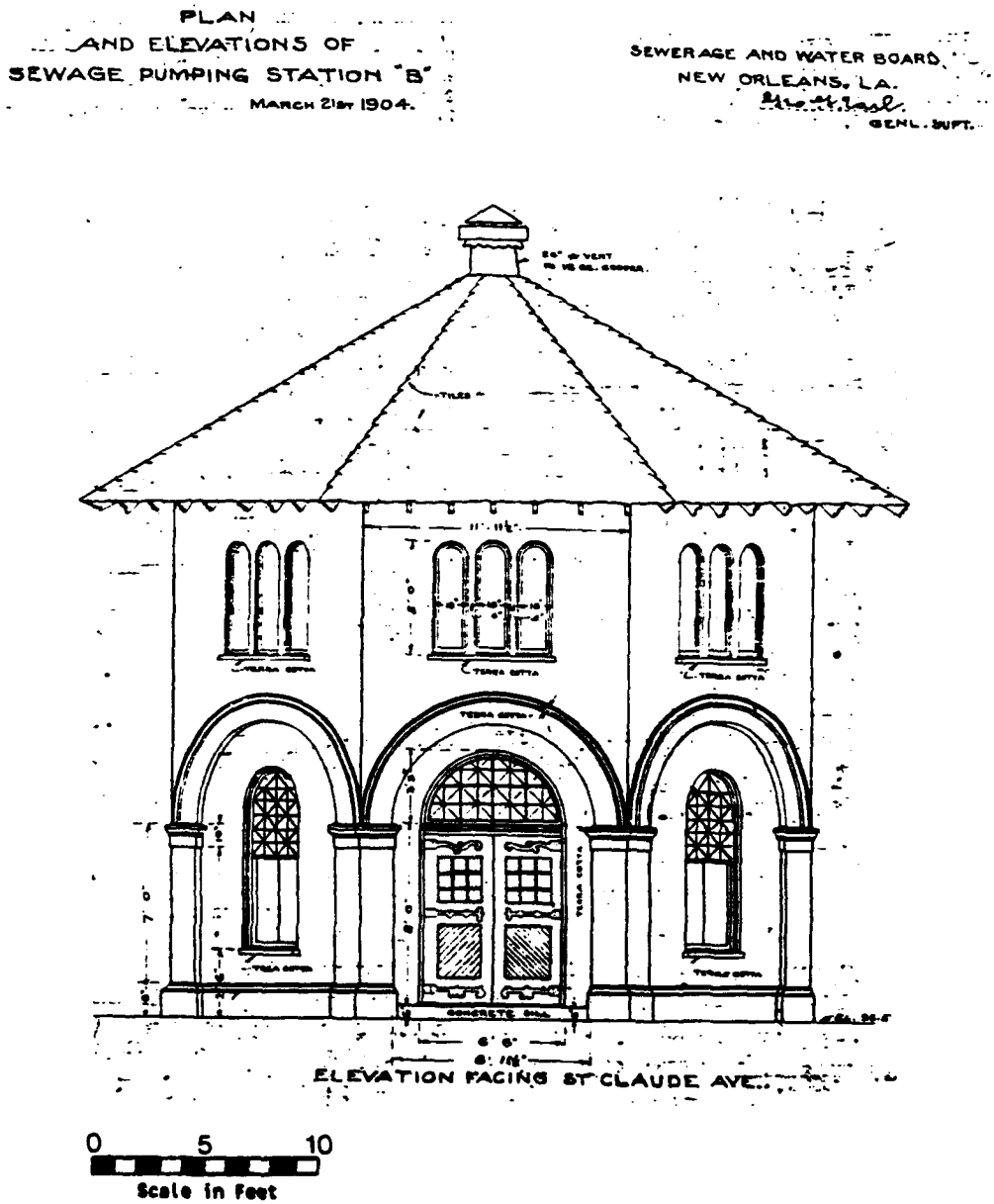


Figure 8. A 1904 drawing showing the elevation of Station B facing St. Claude Avenue (reproduced from Drawing No. 1031-A-10, Sewerage and Water Board files).

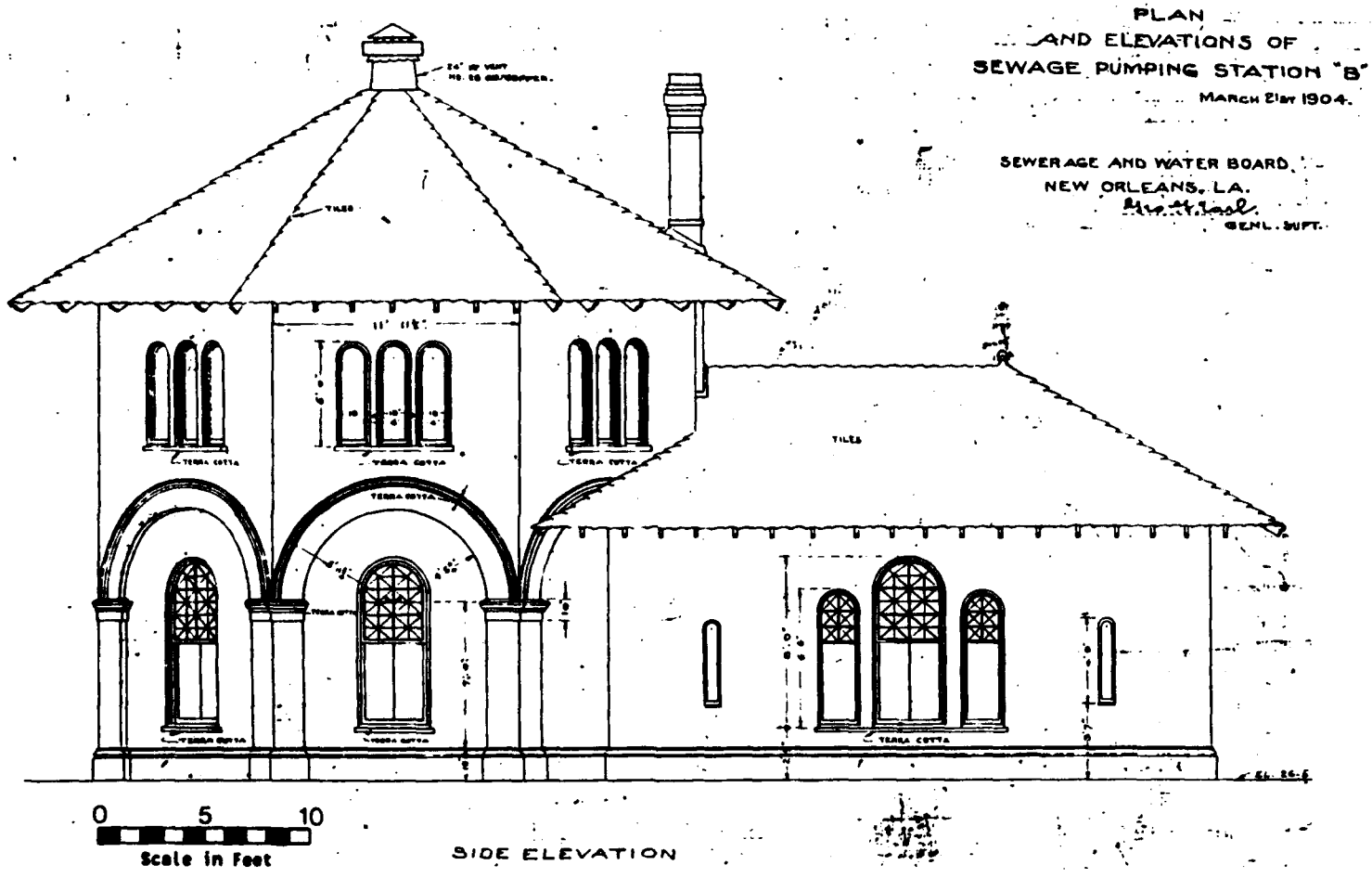


Figure 9. A 1904 drawing of the side elevation of Station B (reproduced from Drawing No. 1031-A-10, Sewerage and Water Board files).

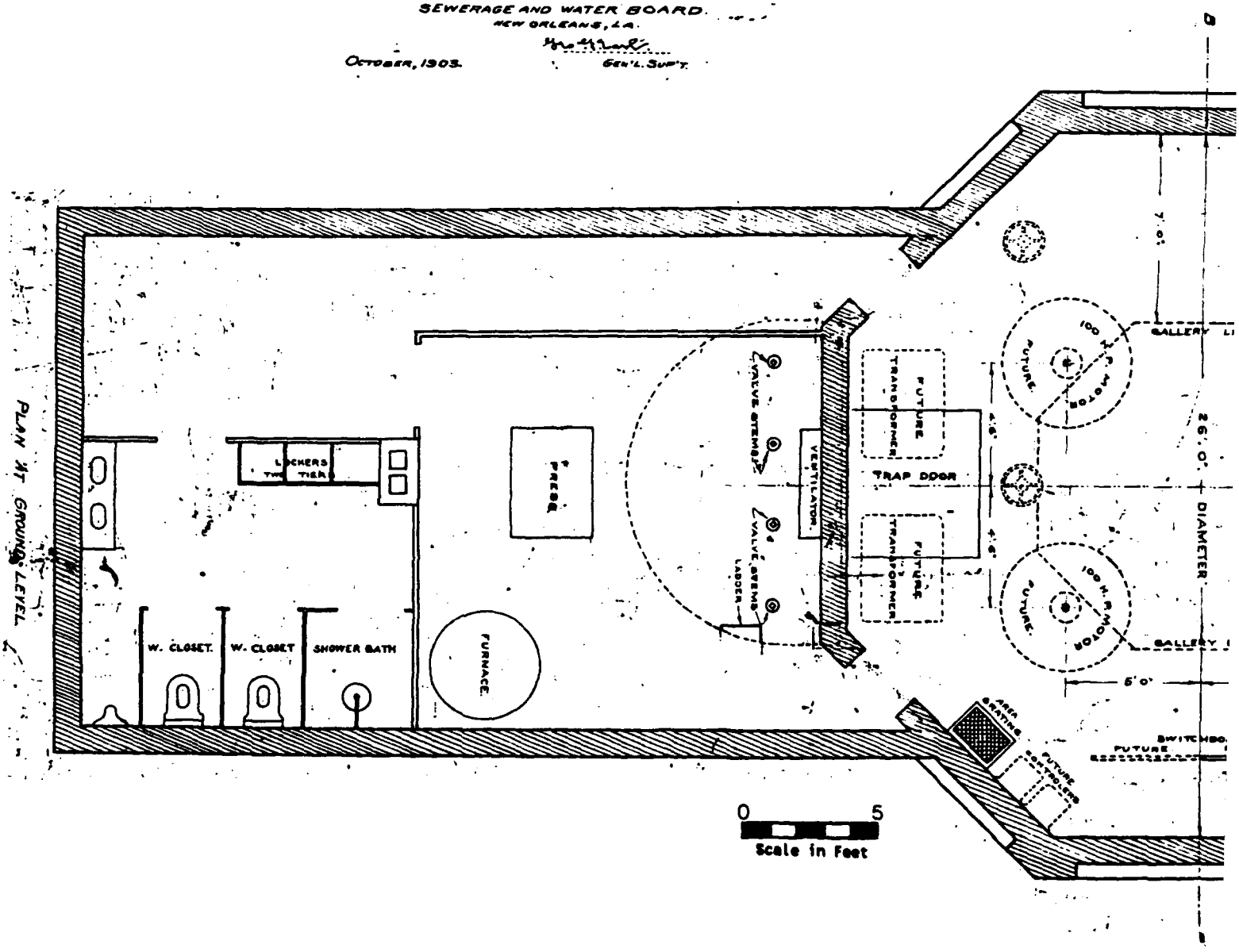
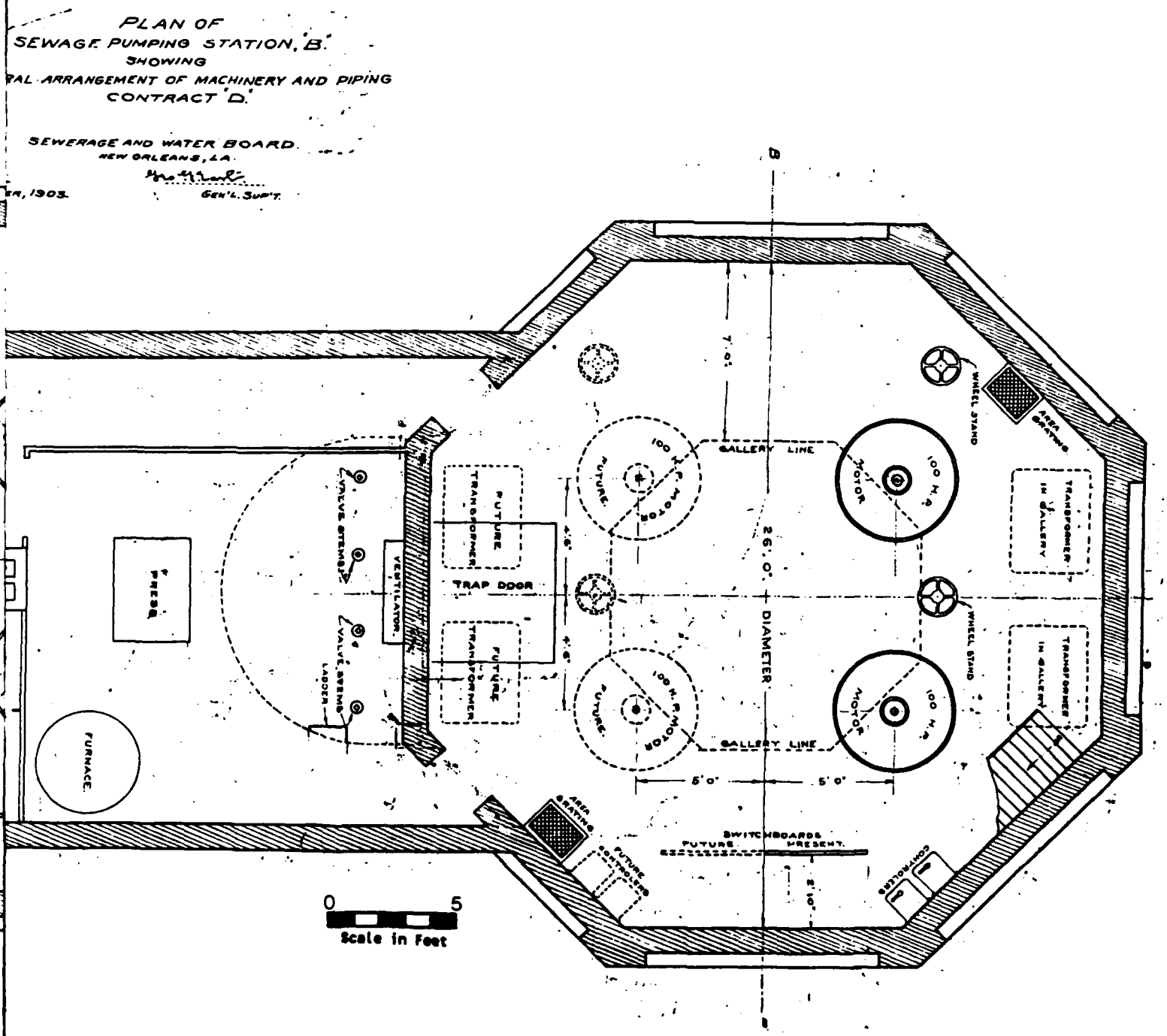


Figure 10. Plan of Station B at ground level (reproduced from Drawing No. 977-A-10 dated 1903, Sewerage and Water Board files).



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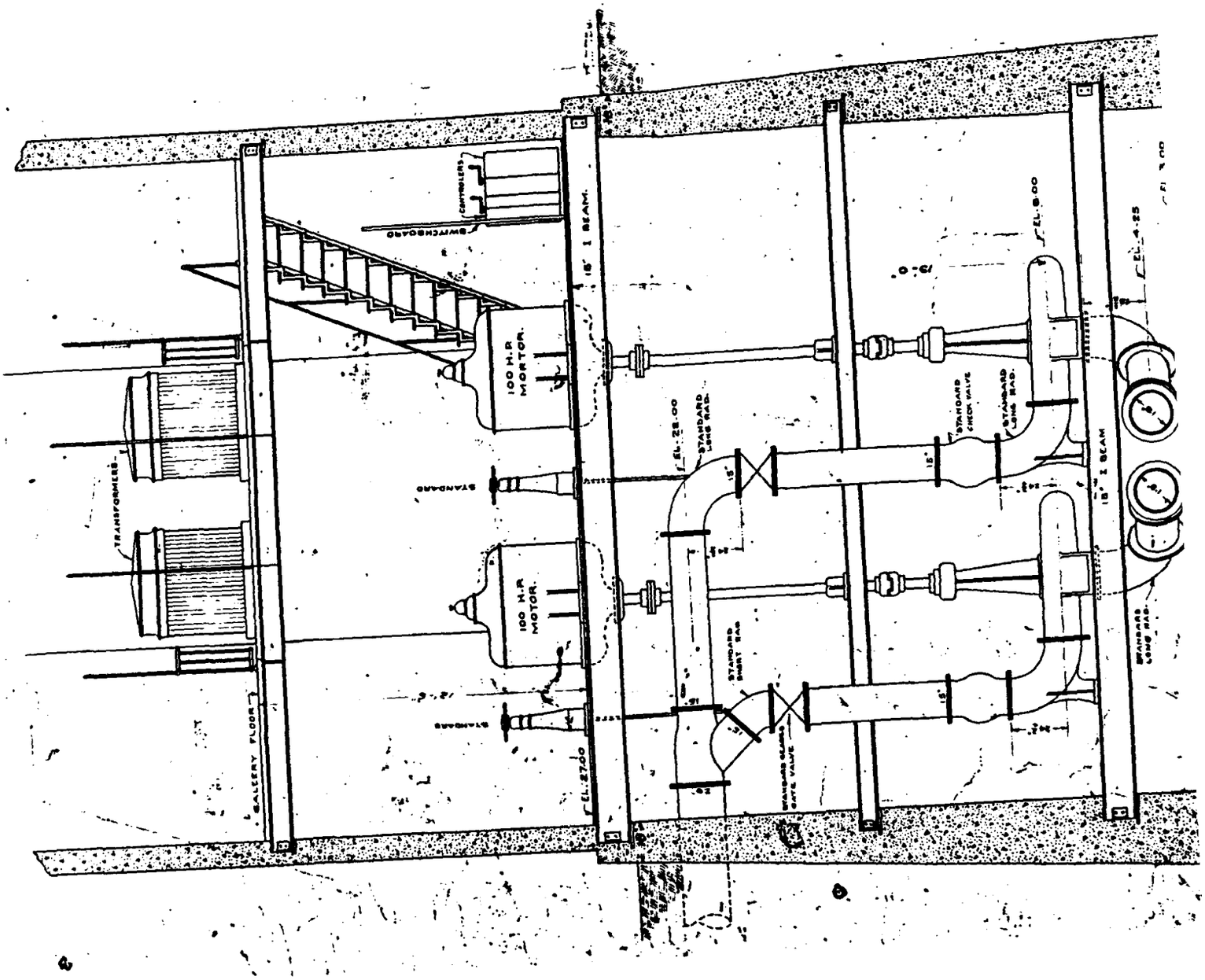
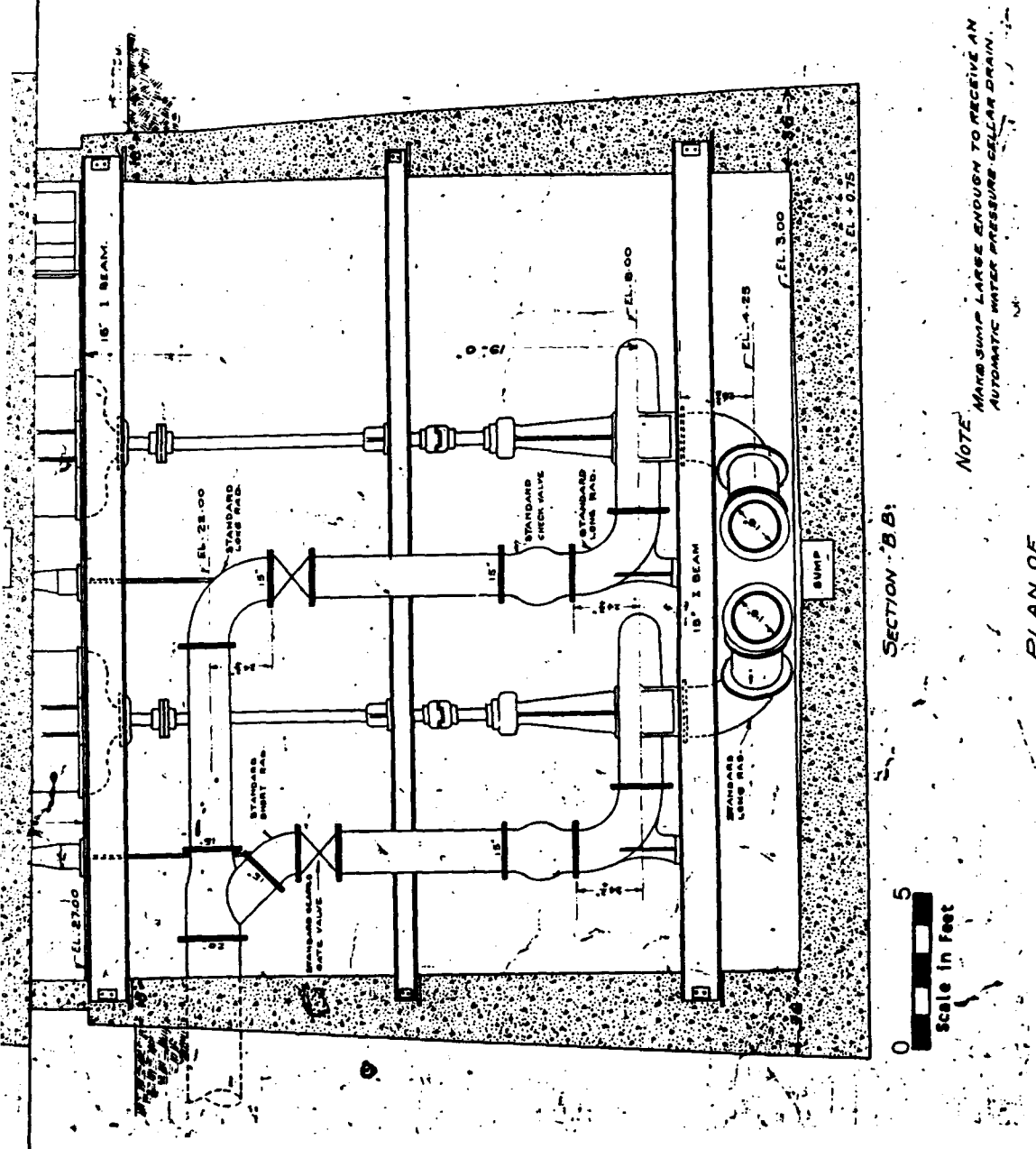


Figure 11. Cross-section BB (refer to Figure 10) showing plans for machinery and piping in Station B (reproduced from Drawing No. 977-A-10 dated 1903, Sewerage and Water Board files).



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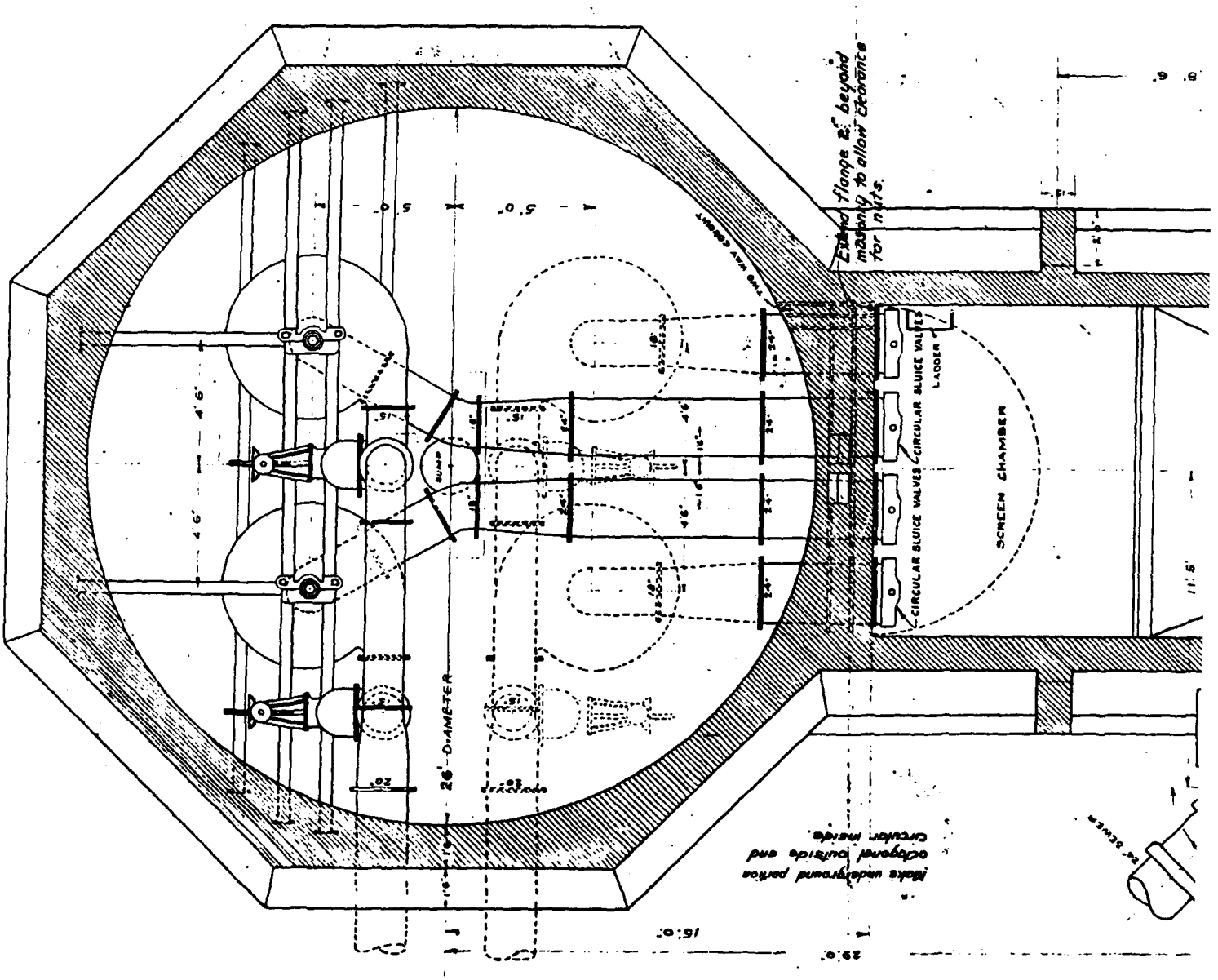
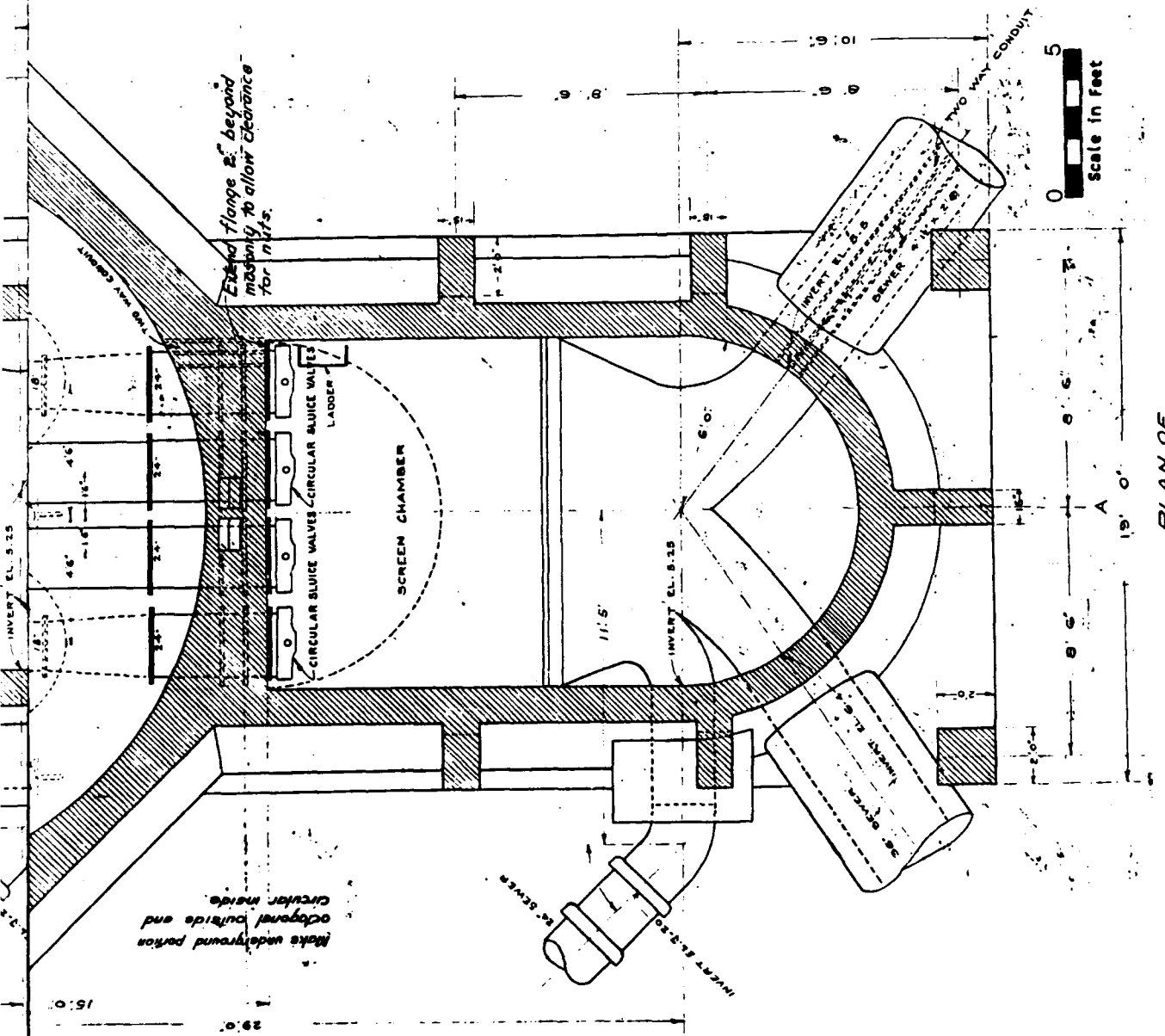


Figure 12. Plan of Station B below ground level (r from Drawing No. 976-A-10 dated 1903, Sewerage and Board files).



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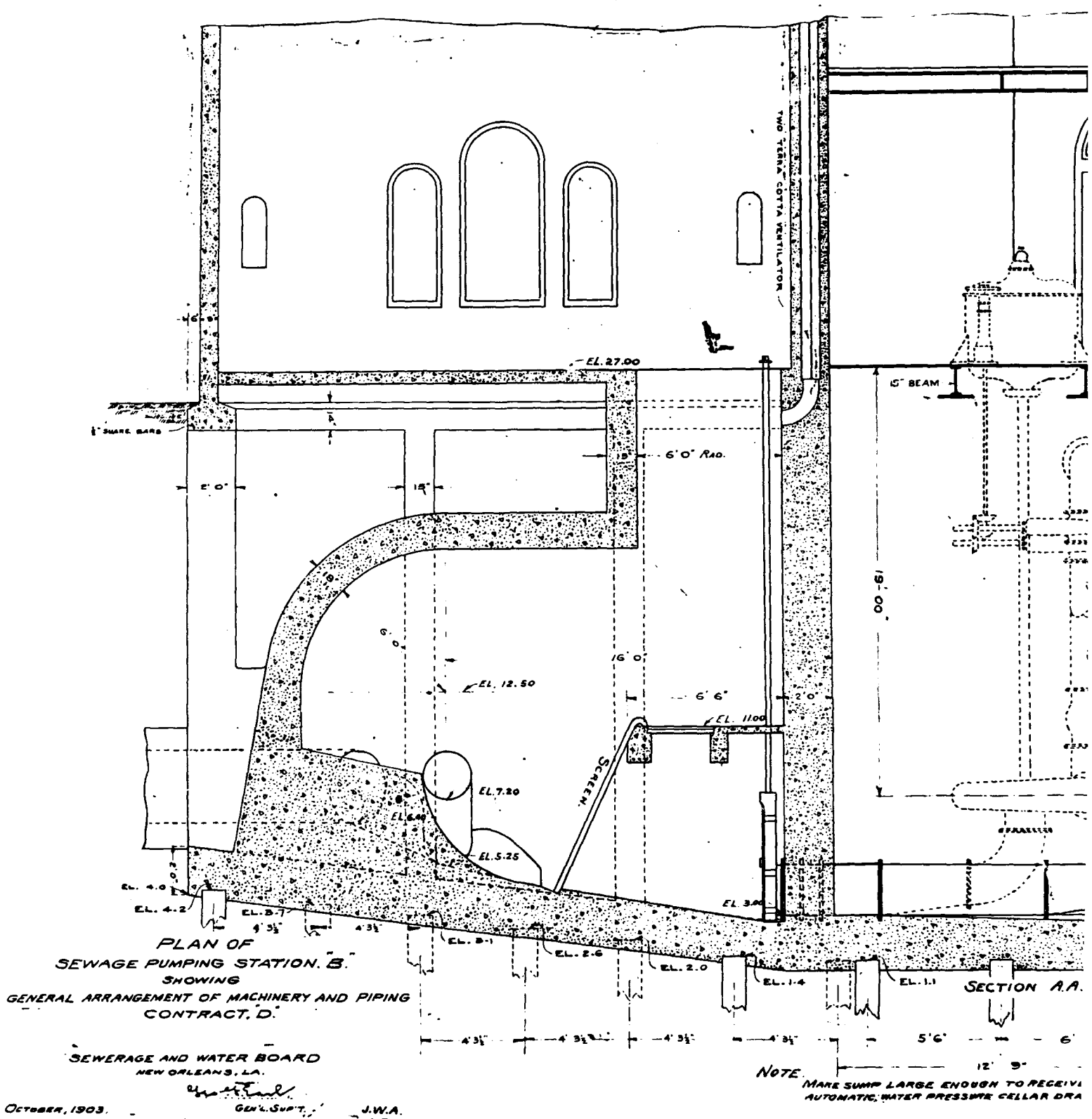


Figure 13. Cross-section AA (refer to Fig plans for machinery and piping in Station Drawing No. 976-A-10 dated 1903, Sewerage files).

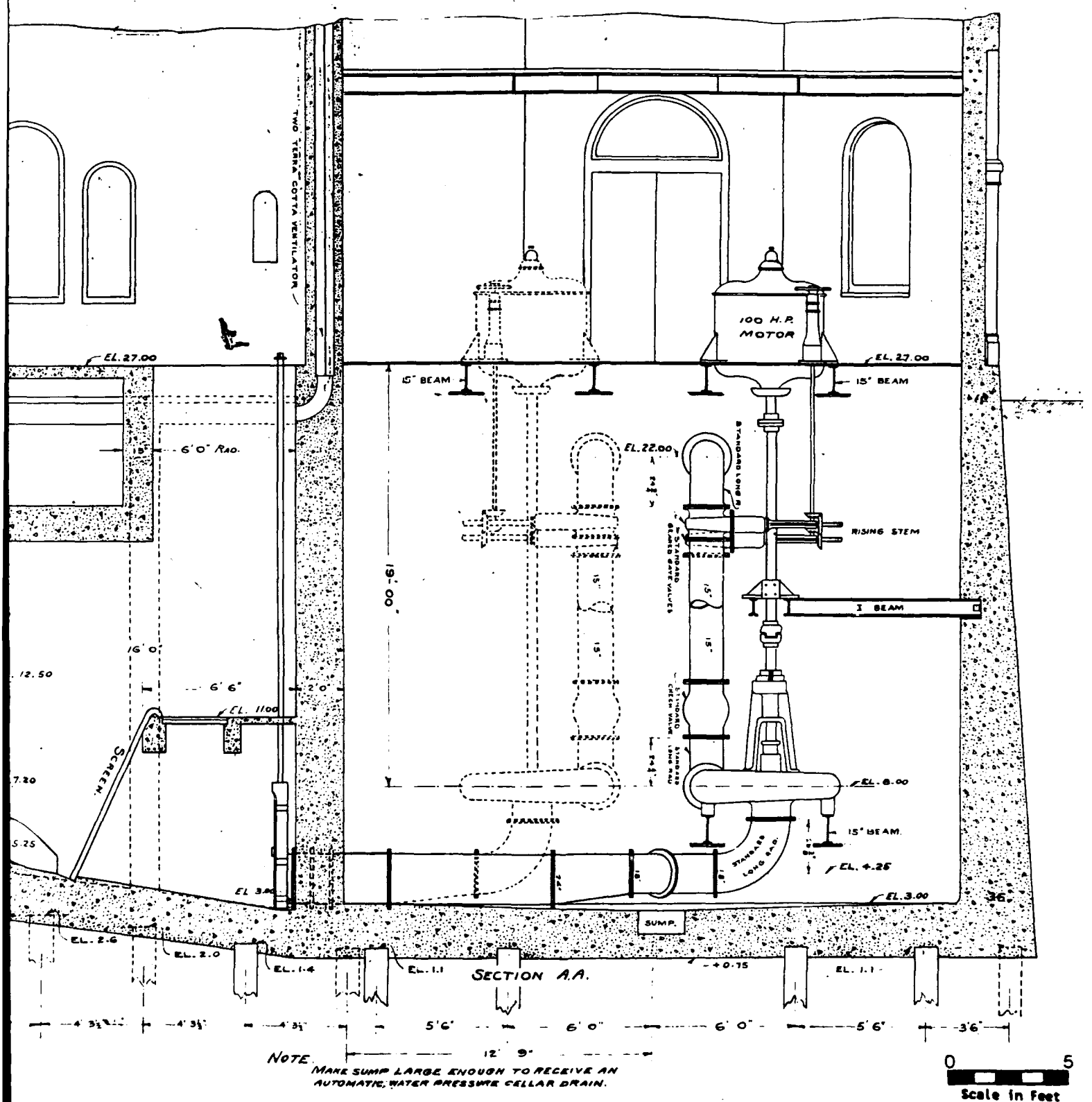


Figure 13. Cross-section AA (refer to Figure 12) showing plans for machinery and piping in Station B (reproduced from Drawing No. 976-A-10 dated 1903, Sewerage and Water Board files).

> also generating the electricity needed to operate the several sub-stations which are in operation, namely, No. 14 at Marengo & Clara, No. 15 at Palmyra and Rocheblave, No. 8 at Carondelet Walk and Broad *and "B" at Jourdan Avenue and St. Claude, the last named station operating an independent discharge into the river at Jourdan Avenue...*
>
> Of the several sub-stations which are operated by electric current carried in ducts on the main sewer, "14", "15" and "8" are in operation daily and work automatically, *while "B", which is also operated by electric current from the main station, is in charge of operating engineers, as it serves a large independent area and forces the sewage direct into the river. This station serves the Villere and Burgundy Street mains, but that section between Alvar and Andry, the river and Villere Street, in which sewers have already been laid, is not yet ready for connections and will not be until November, when it will be connected with said pumping station* (S&WB 15:11-12, emphasis added).

By the end of 1907, Pumping Station A had been in operation for approximately fifteen months. However, some tests of the pumps and machinery, which "did not quite conform to the degree of efficiency required..." were not yet made. Although the defects were of "minor importance," additional time had been given to Camden Iron Works to make the necessary changes (S&WB 16:13-14, 16-17). The finding that the pumps and machinery failed to conform to contract specifications probably reflects A.B. Wood's reputation for demanding near-perfection and one hundred percent efficiency. At that time, Wood was serving as the Board's mechanical engineer. His larger role in the development and growth of New Orleans' sewerage and drainage systems is discussed in Chapter 5.

Also in 1907, the Board decided that it would no longer allow plumbers to make connections from the sewer system to the various property lines. It felt that the plumbers were expensive and lacked "competent men to do this character of work..." The Board resolved to employ and organize its own force for this purpose. The charge for a connection would be $50.00 in the business section

of the city (bounded by Howard and Esplanade Avenues, and by the Mississippi River and Basin Street). The fee for connection in residential areas was set at $25.00 (S&WB 16:14).

By the end of 1908, the Board considered the new system a success. A.B. Wood wrote in the semi-annual report that:

> During the trying time when only a few connections exist and when no flush tanks are in use, the new sewers have operated with entire satisfaction; stoppages or complaints or causes of complaints have been very few, indeed, and it is now nearly two years since connections were first permitted.
>
> If the sewers will work under the above named conditions, there should be no doubt but that they will work when flush tanks at dead ends are connected up, or even frequently filled and discharged, and when an abundant instead of a very scanty flow is furnished by more numerous connections.
>
> All of the pumping stations, both the six automatic low lift stations, which raise sewage from one level to another, and the three high lift stations, which discharge it through force mains into the river, have been in continuous operation, and have each performed the duty expected of it without any difficulty or serious complication.
>
> From this time forward, the satisfactory operation of the constructed sewers and of the pumping stations is only a question of proper maintenance; and of the extension or increase of pumping machinery, force mains or other parts as contemplated in the original plans as the need arises...
>
> As to extensions in pumping machinery, etc., the minimum possible number of pumps and force mains were included in the original installation, with the intention of trying out the pumping

> system, which in some features was novel, and determining the seepage flow before deciding exactly how far to proceed in the matter of pumps and outlets. For this reason, an early addition in these respects must be counted upon and arranged for (S&WB 17:12).

In the Board's eighteenth semi-annual report covering the period July through December, 1908, Wood provided a detailed description of how the sewerage system worked and an inventory of equipment in each of the stations, including Station B. Wood's description is quoted in its entirety because it is the earliest available account of the equipment and machinery in place at the time the system became operational:

> The machinery required for handling the sewage of New Orleans presents several features which are not generally met with anywhere else in this country and which, therefore, should be of especial interest to the engineering profession and to the general public.
>
> The sewage from practically the entire City is collected by, first, small lateral sewers leading to larger submains, which in turn drain into the main sewer, but, on account of the surface of the ground being very nearly flat, it is impractical to bring this sewer to a central point, by a continuous grade. It is, therefore, necessary to build pumping sub-stations along the line of the main sewer, and in some cases, on the submains also, to lift the sewage from one level to another so as to continue its course to the central point.
>
> This central collecting point is at Sewerage Station "A" situated at Orleans and Liberty Streets. The pumps at this Station discharge the sewage through a 48" cast iron force main, about 7,000 feet long, into the Mississippi River at the foot of Spain Street.
>
> *The sewage of the City from Lafayette Avenue down is led to Sewerage Station "B" at Jourdan Avenue and St. Claude*

Street, when pumps discharge it into the river through a 20" cast iron force main about 2,000 feet long.

The sewage of Algiers is discharged from Sewerage Station "C", at Pacific Avenue and Diana Street, through a 20" force main about 4,300.7 feet long.

The pumps in Station "B" and all the smaller sub-stations are run by electric motors supplied with power from Station "A", which is thus the Central Sewerage Power Station in addition to the main sewerage discharge station.

The boiler plant at Station "A" consists of four Heine water tube boilers each of 250 boiler horse power rating, the gases of which are led to a Radial Brick Chimney, one hundred and fifty feet high and 6-1/2 feet in diameter.

The boilers are hand fired and each contains 2,500 square feet of heating surface. They are designed to carry 200 pounds of steam. The boilers are connected to the engines by means of a duplicate system of extra heavy steam pipes, designed so that no single accident to a pipe will cause the shut down of more than one engine or boiler unit.

The boiler plant has shown fine results in efficiency, averaging an evaporation of nine pounds of water per pound of coal at 212° on monthly averages.

The main sewer pumps, two in number, are of the centrifugal type with a vertical shaft directly connected to triple expansion engines, the cylinders of which are arranged fan like around the pump pit and at an angle of 60° apart.

The impeller of the pump is eleven (11) feet in diameter, the suction pipe 36" and the discharge pipe 32" in diameter. They were designed to discharge 3,500 cubic feet of sewage per minute against a

maximum head of 56 feet at a speed of 215 revolutions per minute.

The triple expansion engines are of Corliss type and have cylinders 14", 26" and 40" in diameter and a stroke of 30". The three cylinders are all connected on a single crank pin which gives the engines a very unusual appearance, but which has operated very satisfactorily in service.

Each engine will develop under maximum conditions 300 ind. horse power at a speed of 125 revolutions per minute.

The combined engine and pumping unit is guaranteed to develop a duty of 80,000,000 foot pounds of water energy for each 1,000 pounds of steam furnished by the boilers.

The pumps being near the level of the sewer are very easily primed and are provided with check valves for closing the discharge automatically. A third pump is to be installed as soon as funds are available, two pumps are expected to handle the maximum sewage flow, the third will be a spare unit.

One or the other of these engines has been in continuous operation day and night for the past two years, and both have shown a magnificent record for continuous operation.

The same can also be said of the two engines driving the electric generators, these are 350 I.H.P. with cylinders 14" and 28" by 36" stroke. They have Corliss valve gear and operate at 100 R.P.M.

The condensing plant consists of two Buckeye Barometric Condensers, which maintain, at all times, a vacuum of better than 27".

The generators are three phase, twenty-five cycle, 3,300 volt, 225 Kilo Watt and are controlled by a switchboard of the

latest type. The current from these generators is carried at this voltage through lead armored, rubber covered cables to the various sub-stations. The ducts in which these cables are laid are built on top of the sewer and the sewer manholes are used for outlets. The cables have never failed since the beginning of regular operation.

Station "B", the largest of the sub-stations, contains two 18" centrifugal pumps directly connected to 100 H.P. 200 volt vertical shaft, variable speed induction motors. The pumps are designed to discharge 670 feet per minute against a 44 foot head.

All the other sub-stations are particularly interesting in that they are operated entirely automatically, and without any screening of the sewage, the motors being stopped and started by means of floats in the sewer.

The Stations are inspected daily and the starting devices maintained in perfect condition and have operated with absolute reliability at all times. The savings to the City by not having any attendants at these Stations has been very considerable.

Station 14, at Marengo and Clara Streets, has two 15" centrifugal pumps directly connected to 30 H.P. induction motors. They have a capacity of 710 cubic feet per minute against a head of 8.4 feet.

Station 15, at Rocheblave and Palmyra Streets, has two 12" centrifugal pumps directly connected to 20 H.P. motors. Each pump has a capacity of 450 cubic feet per minute against a head of 13 feet.

Station 1, at Lowerline and Cohn Streets, has one 8" centrifugal pump and motor, with a capacity of 210 cubic feet per minute against a head of 7 feet.

Station 6, at Palmyra and Solomon Streets, has one pump with a capacity of 170 cubic feet per minute against a 6-foot head.

Station 8 at Broad and Toulouse Streets, has one pump with a capacity of 170 cubic feet per minute, against an 8.4 foot head.

Station 9, at Annette and Law Streets, has one pump with a capacity of 270 cubic feet per minute, against an 8.6 foot head.

All these sub-stations are provided with automatic by-passes at the level of the discharge side sewer which would operate in case of the failure of the pumps to start.

The main sewers, wherever they cross a drainage canal, have large gates, which will permit the sewage to be discharged into the drainage system in case of extraordinary emergency.

Stations 1, 6, 8 and 9 are unique in that they are built entirely below the street, thus saving the Board the cost of the real estate which would have had to be purchased had they been built above ground.

These stations are as dry and fit for electrical apparatus as the above ground stations, in fact, cost almost nothing to keep up, being built entirely of concrete.

They are kept white on the inside, a few incandescent lights are left burning and a small ventilating fan is kept in operation continuously, which effectively dries out the dampness and prevents the walls sweating.

The system of sewerage stations has been in operation exactly the same as if handling the entire sewerage of the City for the past two years or more and has

demonstrated beyond a doubt that the sewage can be handled as cheaply and with as great a certainty as could be wished for.

Station "C", in Algiers, is a combined sewerage and waterworks station. There are three 100 H.P. Heine water tube boilers and a radial block brick stack 110 feet high and four and one-half (4-1/2) feet in diameter.

The original sewerage plant consisted of two high speed piston valve engines, driving 12" centrifugal pumps by means of a rope drive. The engines operated non-condensing and developed about 90 H.P. The pumps have a capacity of 400 cubic feet per minute against a 51 foot head.

In order to have this Station also do the waterworks pumping for Algiers economically, the following changes and additions are being made:

The rope drive was discarded and 250 volt, 100 K.W. generators installed directly on the engines, which can develop ample power for these when running condensing at 275 R.P.M.

Variable speed motors are to be attached directly to the sewer pumps.

The generators will supply, in addition to the power to run the sewer pumps, enough to operate all the small low lift pumps required for the filtration process and two turbine pressure pumps.

A direct acting duplex pump was also purchased for emergency pressure purposes. This pump is double acting plunger and ring type, compound condensing with cylinders 12" and 24" by 24" stroke and 18-1/2 water ram and has a capacity of 4,000,000 gallons per day against 125 or 218 foot head.

The electric pressure pumps are one million and two and one-half million gallons capacity against 125 foot head.

There are two four million gallon and one two million gallon low lift pumps to work against a twenty foot head.

It is expected that this station will be able to show a very high operating duty on account of the fact that the load in the engines will be very nearly uniform at the full rated load for the following reasons:

At times of high water in the river, the sewer pumps have the most work to do, and the low lift pumps are not used.

In rainy weather, when the ground seepage in the sewers is increased, the waterworks pumpage is reduced.

The work of changing this station is now going on and one of the sewer pumps is kept in operation to take care of the sewage accumulating.

The most urgent needs of this department are:

1st. An additional force main from Station "A".
2nd. An additional pumping unit at Station "A".
3rd. Additional pumping capacity at Station 14.
4th. Power line from Station "B" to Drainage Station 5.
5th. Duplicate pumping capacity at Stations 1, 6 and 8.
6th. An additional engine unit of the best type at Station "C".

All of the above requirements are fully in line with the original plans and were only left out from first construction either as a measure of economy or in order to have the benefit of experience with certain types of machinery, so far as necessary at first, before committing

> the Board to its use for the whole ultimate equipment (S&WB 18:35-39, emphasis added).

At the time of the mid-year report in 1909, all of the stations including Station B, continued to perform well:

> The main sewerage pumping station, located at Orleans and St. Ann Streets, and the several sub-stations, which operate automatically by electricity supplied from the main station, except Station "B" which discharges the sewage from the lower part of the city directly into the river, have operated efficiently and without interruption (S&WB 19:12).

Station B was shown as built in the final report of the Board for 1909 (Figure 2). The photo caption stated that

> Pumping Station "B"... is equipped with two 18-inch pumps operated by electricity furnished from Pumping Station "A". This station serves the area and pumps the sewage from Lafayette Avenue to the Barracks, discharging the same through a force main into the river on Jourdan Avenue in a similar manner as that discharged by Pumping Station "A." *This station was built and equipped under the contract for the construction of "A" in 1904-1907* (S&WB 20:9-10, emphasis added).

At the end of 1910, the Board expressed its disappointment that only 13,755 premises were connected to the system. This number was lower than expected and showed "...a lack of appreciation of the comforts and benefits which universal sewerage connections will bring..." The Board hoped to make connections to the property line free in 1911 in order to encourage use, and planned to begin the systematic elimination of vaults and cesspools by enforcing the law requiring sewerage connections (S&WB 22:40).

Wood again provided an inventory of equipment in 1911. Only the section pertaining to Station B is quoted here:

SEWERAGE STATION "B"
Jourdan Ave. & St. Claude St.

> Two 15" Vertical Single Suction Centrifugal Pumps, directly connected to 100 H.P., 360 R.P.M. Westinghouse Motors, 25 cycles, 220 volts. Capacity 14.8 cu. ft. per second against 44 ft head.
>
> Efficiency of pump 88%.
>
> Pump the sewerage of the lower section of New Orleans through a 20" force main, 2000 ft. long, from a 45" sewer invert 5.6 C.D. into the Mississippi River at elevation 27 to 38 C.D. (S&WB 24:95).

In his 1908 inventory, Wood indicated that the pumps at Station B were 18". Also, the caption of the 1909 photograph mentioned 18" pumps. However, in the above-cited 1911 inventory they are indicated as 15" pumps. The intervening semi-annual reports do not mention any substitution or replacement, so the discrepancy is probably the result of a typographical or clerical error. Drawing No. 6378-W-16 from the files of the Sewerage and Water Board provides specifications for "Rings for Impeller 15" Centrifugal Pump Station B." The drawing is dated 1924, and it would seem to indicate that at least one 15" pump was in place at that date.

In 1912, the Board reported that all of the sewerage pumping stations were giving "excellent service." It was, however, contemplating replacement of the centrifugal pumps with a new design which would prevent rags and other debris from clogging the system:

> The Board has authorized and it is expected as soon as plans can be perfected, to add considerable to the capacity of these six re-lifting stations. New pumps for these stations will be designed, especially with a view of passing rags, etc., which, of course, should not get into the sewers, but which do get there nevertheless and are the main cause of such obstructions of the present pumps as have to be contended with, which obstructions make it often necessary to open the head hole plates at these pumps for the removal of same (S&WB 26:34).

Although the Board's report did not so state, it was A.B. Wood who was designing the new pumps. Apparently, the six stations to which the quote was referring were Nos. 1, 6, 8, 9, 14, and 15, all of which were intended to be fully automatic.

By the end of 1911, there were 20,133 premises connected to the system. This number represented less than one-third of the premises in the city. The Board resolved that it would give owners 90-day notices and would "...close all vaults, cesspools, privies, water closets, urinals, foul water drains and outlets for any kind of foul fluid material whatever..." They noted that violators were subject to fines and imprisonment, and that the Board had the power to do itself what the owner ought to do (S&WB 24:24,133). By 1912, the Board began to serve the threatened notices (S&WB 26:33).

The number of premises served increased rapidly thereafter. By the end of 1913, the Board reported that a total of 42,020 premises were connected to the system. By the end of the following year that number had increased to 58,059 (S&WB 28:69, 30:21).

Expansion of the system was making some changes necessary. Wood stated in the Board's report at the end of 1914 that

> The increase in the mileage of sewers and in the number of premises connected to the sewerage system has seriously overtaxed the capacity of the sewer stations, and provision is now being made to equip these stations with their full quota of pumps as originally contemplated (S&WB 30:90).

One of these changes was the installation of a 36-inch centrifugal pump at Station A and two new motors. Wood also reported that the generators at Station A "...were shut down practically altogether..." because the station was being supplied with current from the 150 K.W. rotary convertor at the Waterworks Station (S&WB 30:14,90-91). The new pump became operational on April 9, 1915 (S&WB 31:11). Apparently, this new 36" centrifugal pump was not an example of Woods new design because Wood did not complete that design until 1915.

The year 1915 was an important one for the history of the Sewerage and Water Board. Wood's newly developed

screw pumps, designed for installation in New Orleans' drainage system, were tested. The new 36-inch centrifugal pump at Sewerage Station A was purchased under the same contract (S&WB 32:55). Originally, Station A was built as a steam driven station, and it contained two engine driven centrifugal pumps. Only one pump was designed to operate through the single 48" cast iron force main. The other pump was intended as a back-up or reserve. It had been anticipated that a new force main and a new steam pump would be added to Station A. However, an alternative plan was conceived and adopted. The new main was not constructed. Instead, the 36" two-speed centrifugal pump was installed and connected to the already existing main (S&WB 32:55). The alternative plan resulted in a financial savings and is one of many examples of the manner in which A.B. Wood's ingenuity is reflected in the history of New Orleans' sewerage, water purification/delivery, and drainage systems (Chapter 5).

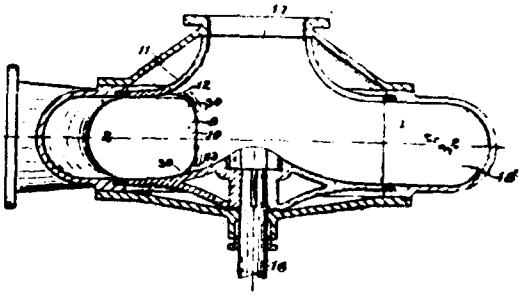
The year 1915 was also important because Wood developed his trash pump at this time (Figures 14 and 15). It was designed to deal with rags and other similar debris which had the potential to clog the pumps at the various pumping stations. In its 32nd Semi-Annual report, the Board noted that the six low-lift stations (1, 6, 8, 9, 14, and 15) were automatic. Sewage was not screened at these stations, and there was no one in constant attendance. Instead, a team of two men and a horse-drawn wagon visited each of the six stations daily for lubrication and an examination of the machinery. In contrast, the "larger sewage pumps" were screened.

Despite the success of the automatic stations until 1915,

> There has, however, been constantly increasing trouble at these stations, due to the obstruction of the pumps by rags and other objects which are illegally discharged into the sewers, and there has been very serious study to provide means whereby automatic operation without screening and the necessary attendance could be maintained in the face of this rapidly increasing difficulty (S&WB 32:57).

Fortunately, A.B. Wood had provided a solution:

1,182,439. CENTRIFUGAL PUMP. ALBERT B. WOOD, New Orleans, La. Filed Sept. 10, 1915. Serial No. 49,847. (Cl. 103—43.)



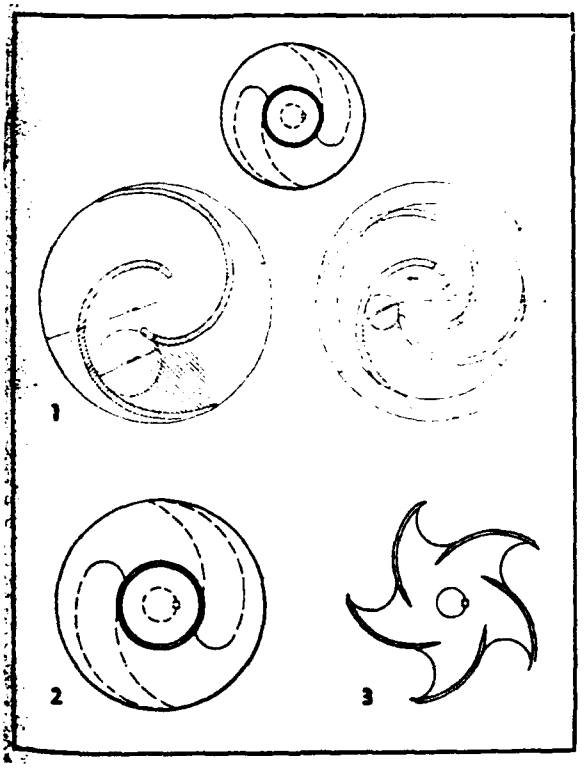
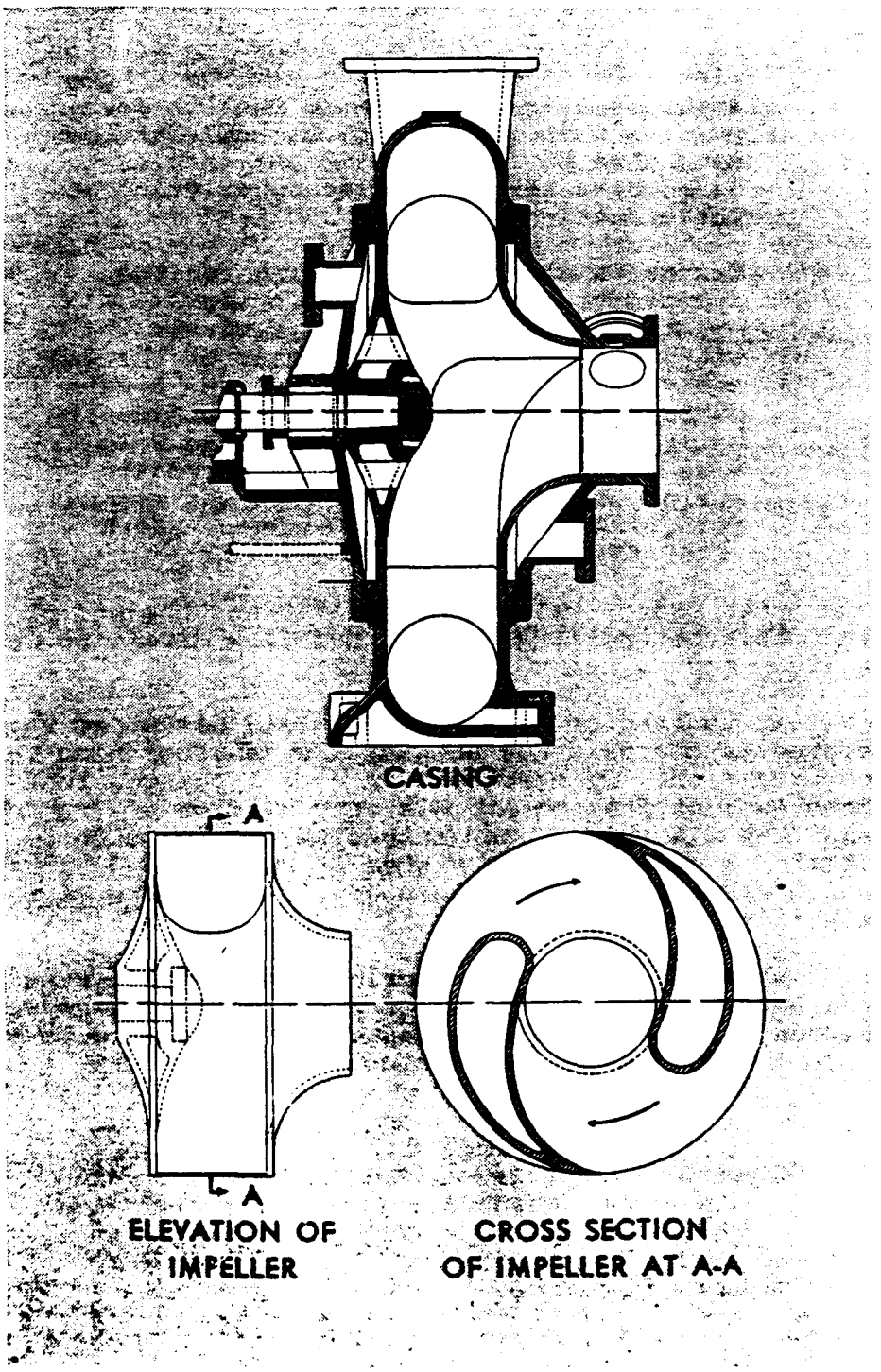


Figure 14. The upper drawing, reproduced from The Official Gazette of the United States Patent Office (1916), shows A.B. Wood's 1915 design for a new type of sewage pump. The lower drawing, reproduced from Municipal Sanitation (Peterson 1938:215) contrasts Wood's impeller design (2) with that of a conventional sharp blade open type impeller (3).

Figure 15. Drawings of impeller and casing of a Wood trash designed to lift and pump sewage in the New Orleans system (from the files of Chester A. Peyronnin).



> After long study of this problem, Mr. Wood has proposed a design for a centrifugal pump, which apparently must pass anything which can enter its suction pipe. Tests of this pump elsewhere have substantially demonstrated that it does possess this qualification, while at the same time having an efficiency at least as good as the pumps already existing at these stations.
>
> Contracts are now outstanding for the necessary additional capacity for existing intermediate lift sewerage stations and for the equipment of the two additional stations No. 3 and No. 5 with pumps of this type, and it is confidently anticipated that by their use the Board will be able to continue the automatic operation of these eight stations without screening and without attendance (S&WB 32:57-58).

One other change being made in 1915 was the use of automatic controlling devices for flow diversion in dry weather and in rains (S&WB 32:59).

At the end of 1915, Wood himself discussed the status of the sewerage pumping system after nine years of operation. He described in detail changes that had been made at Station A. His only mention of Station B was that electrical connections were being made to provide a complete loop system of underground cables which would prevent shutdown due to a failure of the electrical supply (S&WB 32:119-122).

Wood also noted that during wet weather, runoff at the automatically operated sewerage sub-stations was beyond their maximum test capacity. In regard to the trash problem at these stations, he stated that

> ...there has been a steady increase in the amount of rags and other unlawful trash discharged into the sewers, so that the pumps, which are ordinary centrifugal pumps (except that they will pass 3x4-inch solids), generally operate more or less choked up.

> In some cases it has been necessary to clean these pumps twice in twenty-four hours, and this trouble has reached a point so that it seemed that automatic operation would have to be abandoned.
>
> Considerable thought and study was given to various devices for screening the sewers. The difficulty of making these automatic, the requirement for a system to collect and dispose of these screenings, and the fact that these stations are in well populated residence districts, has caused the abandonment of this method.
>
> Pumps are now being constructed which can be operated continuously without screening and which will, therefore, eliminate these troubles (S&WB 32:121).

Available data indicate that the first New Orleans example of Wood's trash pump was installed in the newly constructed Sewerage Station No. 5. Wood stated in the 33rd semi-annual report at the end of 1916 that

> The motors and special sewerage trash pumps at this station [No. 5] were successfully started, and this station is now in regular service and giving satisfactory results (S&WB 34:54).

That same report provided additional details concerning the pumps:

> During 1916 the new pumps and motors to be installed at the seven existing automatically operated sewerage relifting stations were received and those for Station No. 5 just completed, were installed and put into operation.
>
> These pumps have 12" suction openings, and are operated without screening of any kind whatever, being expected to pass anything which can enter them - a ball, a little less than 12" in diameter, or rags or any kind of assorted trash.
>
> The efficiency of these new pumps will be very much higher than the efficiency of

> the original sewage pumps at these stations. The new station, No. 5, has not as yet sufficient sewage coming to it or a sufficient area of sewers tributary to permit of extended tests of these pumps, and of the automatic controlling apparatus connected with them and outlined in the 1915 report. Further installation of these pumps and of similar controlling apparatus will be made during 1917 at several of these pumping stations, to all of which large areas of sewers and large amounts of sewage are tributary, when thorough tests in all respects will be available. Such tests as can be made under the conditions presently existing at Station No. 5, however, indicate that the problem of automatic operation without screening and without attendance, and also of automatic transference of discharge flow to different outlets, as conditions may require, will be satisfactorily met (S&WB 34:19-20).

At the end of 1917, Wood discussed the operation and design of one his trash pumps which had been installed in Sewerage Station No. 14:

> The new sewerage trash pumps at this station [No. 14] have been in continuous service for the past six months, and this Station now represents a distinct step in the solution of the problem of automatic Sewerage Operation by pumping.
>
> All pumps previously available for this class of service were unable to handle rags or similar trash which finds its way into the sewers, requiring frequent stops for cleaning and a very considerable reduction in average capacity and efficiency, due to clogging of the runner passage.
>
> In actual practice, there was required for handling the sewage of this Station the continual operation of two 14" Sewerage Pumps, consuming together a total of 40 kilowatts for their operation. They also required cleaning

twice a day to maintain tolerable conditions in the intake sewers.

It was becoming evident with the increase in the number of sewer connections that unless this problem could be solved the automatic operation would have to be abandoned and the city placed to the expense of providing shifts of operators at each of the seven existing sewer stations.

This Department designed a new type of pump as a solution of this problem. This pump of normal 12" size is capable of handling a solid sphere 12 inches in diameter, rags, sacks or similar trash in any quantity capable of entering the suction inlet without any chance of choking the passages or damaging the pump.

In actual service the pumps at this Station have never been cleaned out, handling the raw sewage continuously and discharging at their rated capacity.

It was hardly expected that the highest efficiency could be obtained on such a design, but careful tests with weir measurements and with velocity check have demonstrated an unusually high average efficiency. These tests were made while the pump was in regular service in pumping unscreened sewage....

As a practical example of this efficiency, one pump consuming 25 kilowatts for about two-thirds of the time does superior work to the two old pumps operating continuously at 40 kilowatts input, besides saving the time and expense of cleaning... (S&WB 36:55-56).

Sewerage Station No. 14 was one of the original low-lift stations. Wood's report, cited above, indicates that this may have been the first of the early stations at which one of the new trash pumps was installed. As noted above, one of the pumps had already been installed at the newly built Station No. 5. Plans

at the end of 1917 were for additional installations in the low-lift, automatic stations. Wood wrote that "Eighteen pumps of this design are being installed as rapidly as possible in the other automatic stations" (S&WB 36:56).

At the end of the following year, it appears that a Wood trash pump had been installed in a number of stations but not in Station B:

> ...there was in 1918... $43,200 in the improvement of sewerage, power and pumping stations, including the installation of trash pumps and automatic drainage connections, which are now in place at stations numbers 1, 5, 8, 14, and 15, and are being installed at stations numbers 6 and 9. These additions are giving splendid results in the improvement of the service (S&WB 38:10).

And

> The installation of the special sewerage trash pumps at Sewerage Stations Nos. 1, 5, 8, 14 and 15, and the automatic drain connections thereto has made the conditions in the sewers practically equivalent to gravity outfalls.
>
> The automatic operation of these pumps, which have never required cleaning, has been perfect at all times and without a single case of shut down or repair of any kind during the year (S&WB 38:50).

In 1918, the only changes discussed in relation to Station B were the result of construction of the Industrial Canal. Some tributary sewers were being replaced. Also, it was anticipated that a new force main would have to be built from Station B to the River:

> The 20" cast iron sewer discharge main on Jourdan Avenue from Pumping Station B to the river will have to be abandoned and taken up. It is intended to replace this by a 30" cast iron discharge main extending down St. Claude Street to Forstall Street and out Forstall Street to the river (S&WB 38:27-28).

The new force main from Station B to the River was in place by the end of 1919 (S&WB 40:13). In regards to trash pumps,

> ...The new trash pumps have been installed in all the substations and have operated with perfect satisfaction without screening and without cleaning or repairs... (S&WB 40:57).

One of the 1923 reports provides information concerning the manner in which specifications were drawn and contracts issued for pumps for the Sewerage and Water Board:

> The [drainage pumps], *like all pumps built for the Sewerage and Water Board since 1912,* were built upon plans furnished by the Mechanical Engineering Department of the Board, without any guarantee as to performance, and the result, as a whole, is the lowest cost and most efficient duplication of pumping capacity which would have been obtained (S&WB 48:15, emphasis added).

Wood trash pumps were apparently not installed in Station A until 1925. At that time, two 24" Wood Trash pumps electrically driven by 120-horsepower motors were installed. These were expected to be in service during 1926. The original engines and pumps from that station were "...partly sold as junk..." (S&WB 52:95). However, at least one 36-inch pump which had been installed in 1915 was still in use in Station A in 1927, and a screen was still being used in conjunction with it. During 1927, an impeller associated with the pump was replaced (S&WB 56:114). Wood noted the superiority of his new pumps in that year:

> One of the two 24-inch trash pumps installed in this station [A] to provide relief for the above unit has been placed in successful operation.
>
> The increasing amount of rags and trash coming to this station at the increased rates of flow now maintained with two pumps and two discharge mains is causing considerable trouble on the screen which is still maintained at this station. The trash pumps

> do not require any screen, but the screen has had to be maintained on account of the use of the original centrifugal pump.
>
> The trash pumps in the sub-stations have continued to operate without repairs and without stoppages, giving no trouble whatever from trash accumulations, their efficiency and capacity being maintained at all times (S&WB56:114).

It appears that Wood trash pumps were installed in Station B during 1930 or shortly thereafter. The Board's report dated December 31, 1930 stated that:

> The contracts for the construction of three additional sewer sub-stations Nos. 16, 17 and 18 and main outfall Sewer Station "D", and *increase in capacity in Station "B"*, have proceeded satisfactorily during the year (S&WB 62:123, emphasis added).

Drawing Nos. 6981-W-16 (not reproduced in this report) and 6982-W-16 (Figures 16 and 17, from the files of the Sewerage and Water Board) of the floor plan of Station B are dated 1929. They show the locations of two existing pumps and two existing motors. They also show the locations where two new pumps and two 275-horsepower motors were to be installed.

Comparison of Figure 16 with Figures 10 and 12 appears to indicate that there was one major difference between Station B as planned in 1903-1904 and Station B as it was built. The original plans indicated that the first two pumps and motors would be installed at positions on the south side of the octagonal portion of the structure. However, the 1929 plans indicate that the original pumps and motors had been installed on the north side, which is the side closest to the main entrance of the structure.

In the list of contracts for work in 1930, Contract 200-S was for motors, switchboards, transformers, and accessories for Stations 16, 17, 18, and "B." Another contract, 202-S, was for pumps for the same stations (S&WB 62:235). The semi-annual reports first mention these two contracts in 1929 which is the year that plans were drawn to delineate changes at Station B. Based on the evidence presented in this chapter it appears

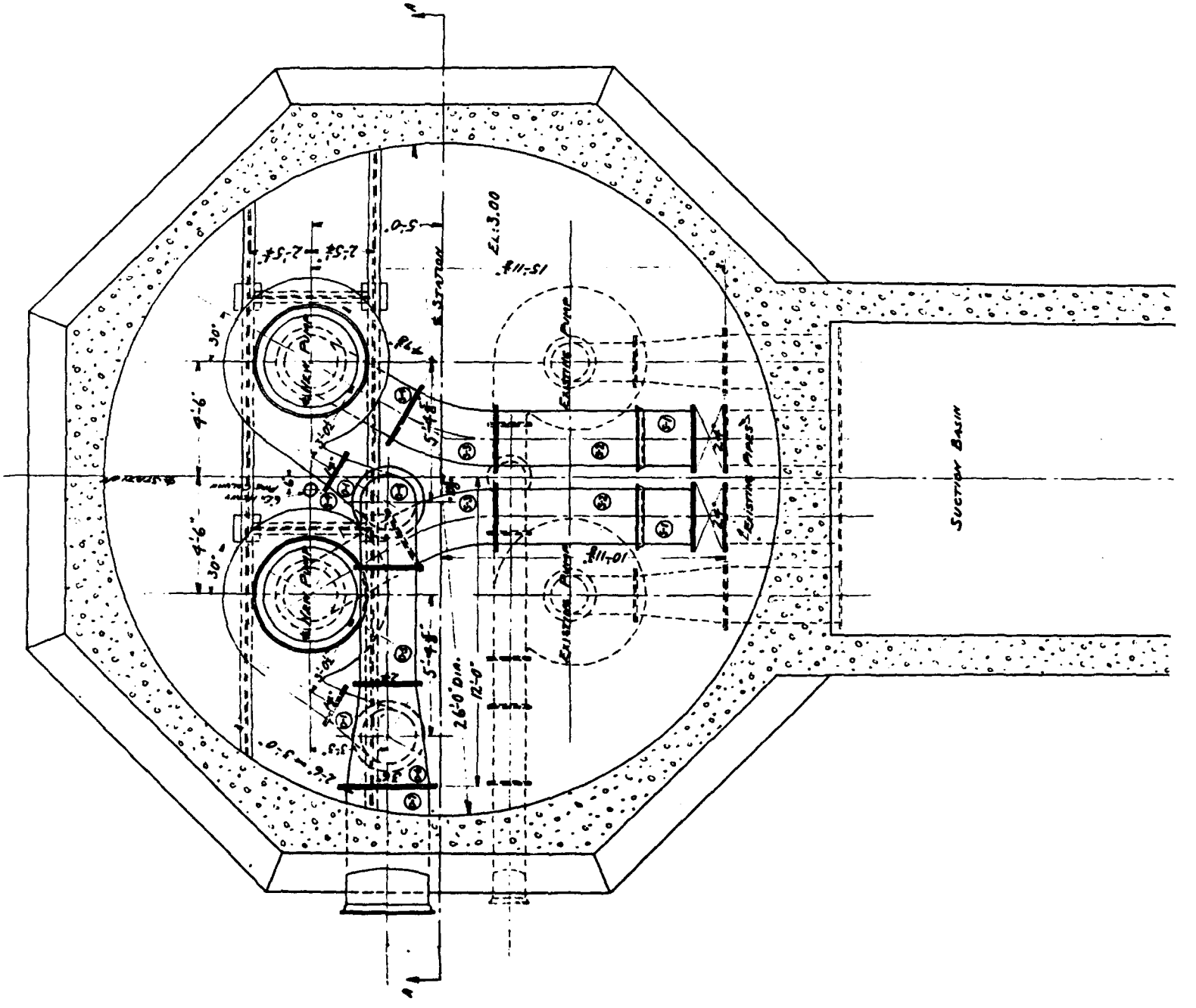
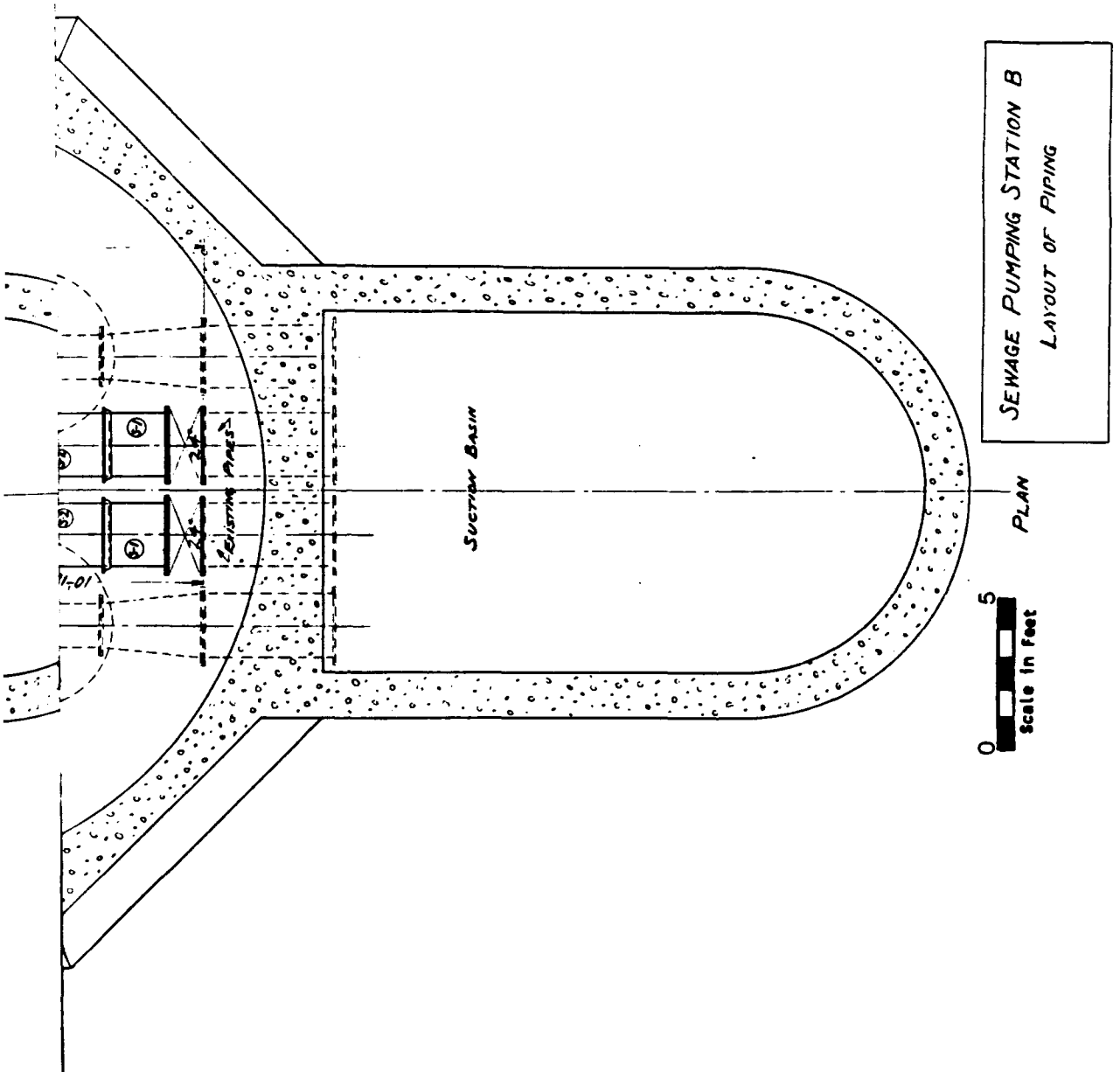


Figure 16. Plan of Sewerage Station B in 1929 locations of existing pumps and of pumps that w installed (reproduced from Drawing No. 6982-W-1 and Water Board files).



owin 16. Plan of Sewerage Station B in 1929 showing
e to ons of existing pumps and of pumps that were to be
Sew led (reproduced from Drawing No. 6982-W-16, Sewerage
ter Board files).

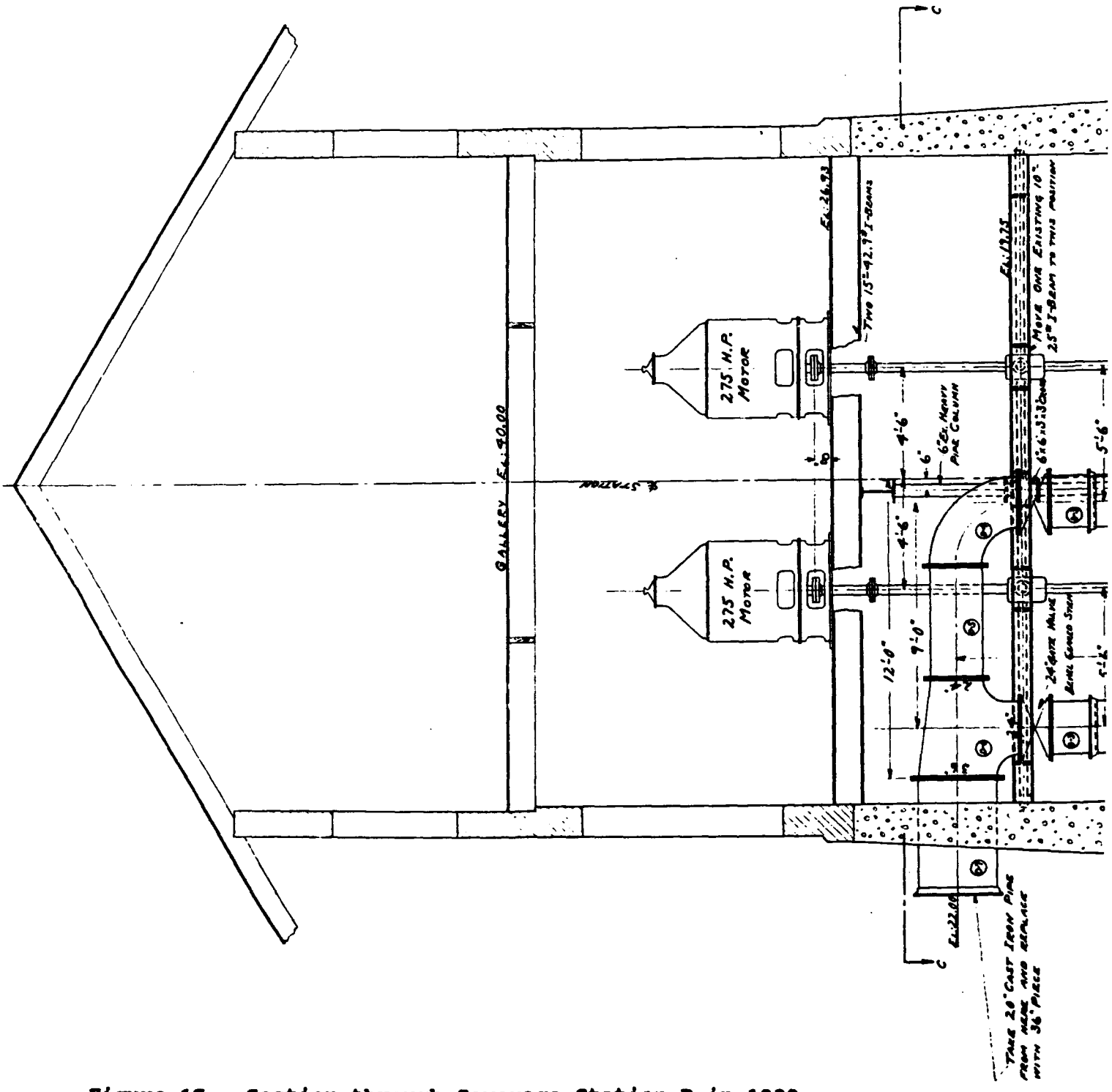


Figure 17. Section through Sewerage Station B in 1929 showing pumps and motors that were to be installed. Refer to Figure 16 for the location of the section. (Reproduced from Drawing No. 6982-W-16, Sewerage and Water Board files).

tation B in 1929
be installed. Refer
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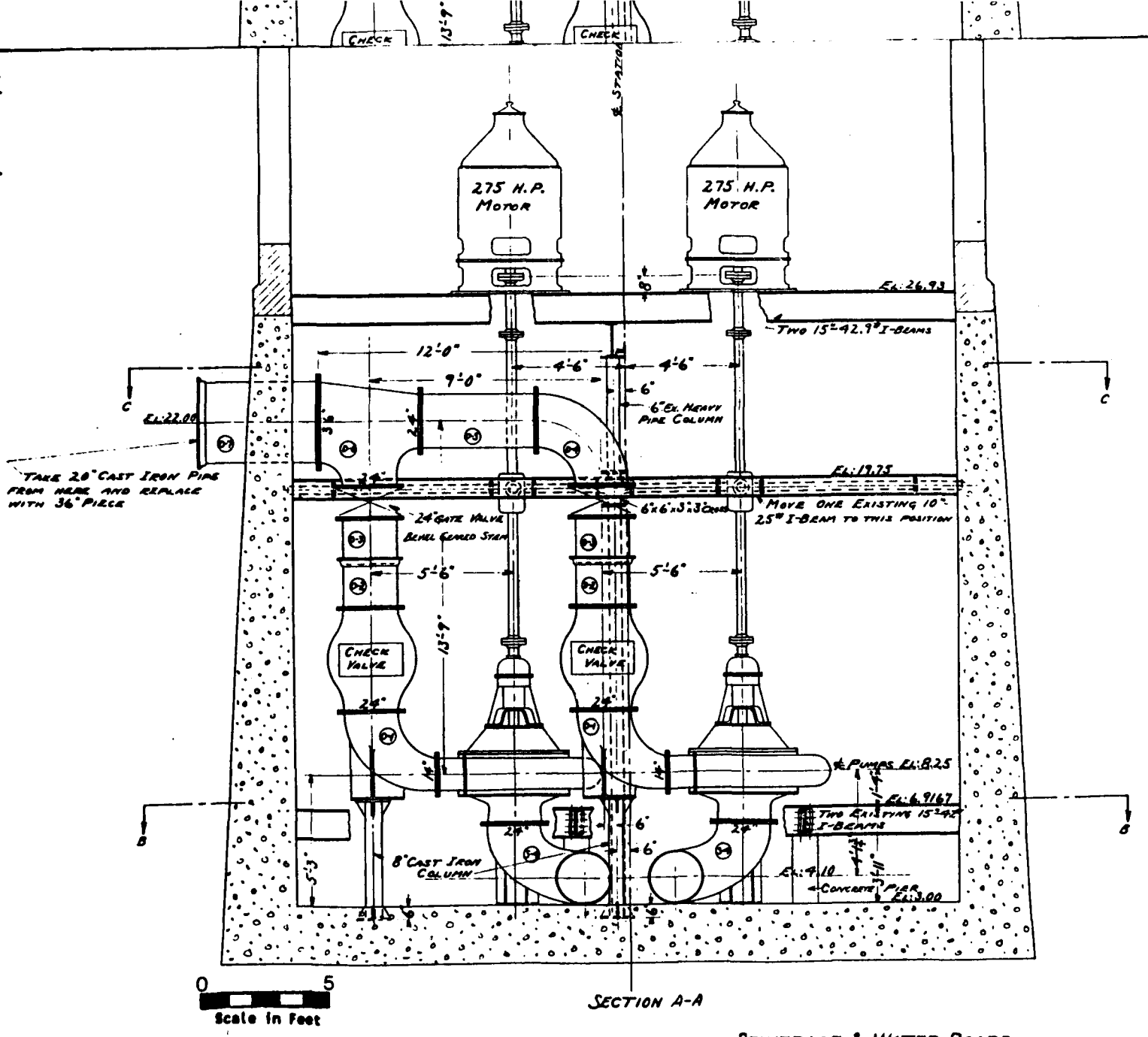


SEWAGE PUMPING STATION B

LAYOUT OF PIPING

SEWERAGE & WATER BOARD OF NEW ORLEANS, LA.

SEPT. 18, 1929 GENL SUPT.

DRAWING NO. 6782-W-16

DRAWN BY ~ F.F.C.
TRACED BY ~ F.F.C.
CHECKED BY ~

FOR DETAIL OF SECTIONS B-B & C-C SEE DRAWING NO. 6783-W-16

that Station B was one of the last of the early pumping stations to receive a Wood Trash Pump.

Contract 202-S for the pumps for Stations 16, 17, 18, and B was with Economy Iron Works and the amount was $23,501.38. Contract 200-S for the motors, switchboards, transformers, and accessories for the same stations was with Westinghouse Electric and Manufacturing Company. The amount was $60,268.00 (S&WB 66:127).

Only a few additional notations related to construction or changes at Station B were observed in the Board's semi-annual reports. At the end of 1949, $294.11 had been spent for "repaving floor" (S&WB 100:102). In 1952, the sidewalk on the Sister Street (west) side of the structure was paved (S&WB 106:98). Also, steel doors were purchased for Station A in 1954 (S&WB 110:112). Although doors for Station B were not mentioned, it is likely that this is an indication of the approximate date when Station B's original wooden doors were replaced with metal doors. In 1955, a contract with R.P. Farnsworth and Company for the erection of wind bracing was completed, and this may also relate to Station B. In 1958, an oil circuit breaker, electrical supplies, and two vacuum pump assemblies were purchased for Station B. In 1978, a new fence and new concrete paving for the exterior were constructed.

CHAPTER 5
BIOGRAPHIES OF IMPORTANT PERSONAGES ASSOCIATED WITH THE NEW ORLEANS SEWERAGE AND WATER BOARD

Superintendent George G. Earl

George G. Earl was born into a Quaker Colonial family near Allentown, New Jersey during the Civil War. He was the only child of Holmes Earl and Annie Taylor Earl. In 1880, Earl graduated from the Freehold Institute. Four years later, he received his degree as a Civil Engineer from Lafayette College in Eaton, Pennsylvania. Because of his subsequent achievements in engineering, Lafayette College conferred the degree Doctor of Science upon George Earl in 1918 (Chambers 3:365; Kendall 3:1089).

Earl worked for the United States Geological Survey in New Jersey in 1884 and 1885. For the following two years, he worked in the engineering department of the Atchison, Topeka and Santa Fe Railroad. He did location and construction work on the line between Chicago and Kansas City. Earl came south in 1888 to undertake sewer construction work in Montgomery, Alabama. He eventually went into business with Captain W. G. Williamson, the former city engineer for Montgomery. Their firm specialized in sewerage and water works construction. Earl then served as city engineer of Americus, Georgia from 1890 to 1891 (Chambers 3:365, Kendall 3:1089-1090).

Earl came to New Orleans in 1892 to accept the position of chief engineer with the New Orleans Sewerage Company. This company had a contract with New Orleans to build a sewerage system (Chapter 3). The company went into receivership around 1895, but Earl was retained as chief engineer. Earl had done exhaustive studies on the topography of the Crescent City and its sanitary conditions. Therefore, when the Sewerage and Water Board of New Orleans was established in 1900, it appointed Earl as its chief engineer and general superintendent. As such, he oversaw the planning, construction, and expansion of the city's drainage, sewerage, and water works systems. Earl served in this capacity until his retirement in 1931. He continued on as a private consultant to the Board for some time after that. Charles J. Theard, President Pro Tempore of the Board, declared that George Earl was one of the best engineers in the profession and his service as a public servant had been rendered with "the rugged honesty of a stainless character" (Chambers 3:365, Kendall 3:1090, The Southern Plumber 1931:32-33).

Superintendent Alfred Francis Theard

Alfred Theard was born in New Orleans in 1865, and attended the Jesuit College in that city as well as Spring Hill College in Alabama. In 1893, he obtained employment with the Engineering Department of the City of New Orleans. In 1896, he became affiliated with the New Orleans Drainage Commission, first as a draftsman and later as assistant engineer. When the Commission was consolidated with the Sewerage and Water Board in 1903, Theard began his long association with that body. From 1913 until 1934, he served as Principal Assistant Engineer in Charge of Drainage. In 1934, he became General Superintendent of the Board (American Society of Civil Engineers n.d.:1).

In addition to his activity in the field of engineering, Theard worked as an architect. He prepared plans for completion of the Chalmette Monument at the site of the Battle of New Orleans and prepared plans for the Louisiana Memorial Monument in the National Military Park at Vicksburg, Mississippi. In 1937, Theard's achievements were recognized by the American Public Works Association which awarded him its Veterans Plaque for his "long and faithful services" to the City of New Orleans (American Society of Civil Engineers n.d.:1-2).

Superintendent Albert Baldwin Wood

The only comprehensive account of the life and work of Albert Baldwin Wood is an unpublished manuscript by Ray M. Thompson (n.d.). The manuscript is on file in the Manuscripts Division of the Howard-Tilton Memorial Library. The biography of Wood presented below is derived largely from that document. A shorter version of Thompson's manuscript was published in New Orleans Magazine (Thompson 1973).

When the present systems of drainage, water supply, and sewerage were proposed for the City of New Orleans, they had to be designed with pumps that were available at the time. None of these pumps were particularly satisfactory for the demands of the system. Fortunately, Albert Baldwin Wood began to work for the Sewerage and Water Board during its first year of operation. His work for the Board would result in new pump designs that were subsequently adopted throughout the world.

Wood was born in New Orleans in 1879. On his mother's side, he was a descendant of Don Francisco de Bouligny who was a governor of Louisiana during the Spanish colonial period. His father's family was from Pennsylvania. He attended Tulane High School and then enrolled in the engineering department of Tulane University. His talent for invention was apparent even during his college career. He and a classmate, after reading an article by Marconi, built a wireless set and established communication between two Tulane classrooms. In 1899 he graduated with honors, and received the Glendy Burke Award in mathematics (Thompson n.d.:1, 5).

After college graduation, Wood accepted a job with the Red River Packet Line. He remained with that firm for only a few months, after which he accepted a job as a mechanical inspector for the newly formed New Orleans Sewerage and Water Board. He continued his association with that body from 1899 until his death in 1956. For a time he served as assistant manager of drainage under Alfred Raymond. In 1906, Wood was promoted to the position of mechanical engineer. In 1908, he was placed in charge of the water works pumping station and the various sewerage stations. When Raymond died in 1915, Wood was placed in charge of drainage operations. In 1939, after the death of Alfred F. Theard, Wood was elected general superintendent of the Board. He served in that capacity until 1956. During his association with the Board, he refused offers from other cities and countries, even when those offers would have resulted in an income ten to twenty times more than that which he received in New Orleans (Thompson n.d.:5-6,9; 1973:42).

As a new engineer in charge of testing electrical equipment for the Board, Wood examined pumps slated for installation in the pumping station at St. Louis and North Broad. He refused to accept the pumps, and ordered them rebuilt. This was the beginning of his reputation as a man who demanded near-perfection of mechanical and electrical equipment. When equipment failed to meet his high standards, he often developed new designs that would do so (Thompson n.d.:10, 1973:43).

At first, Wood did not patent his inventions, but he began to do so when he realized the necessity for protecting his ideas. At the time of his death, he was credited with 38 patents. Use of his inventions around the world, as well as fees he received for serving as a consulting engineer, produced a substantial income. However, Wood never collected royalties for the use of

his inventions by the New Orleans Sewerage and Water Board (Thompson n.d.:10, 1973:43).

In 1906, Wood invented a six foot centrifugal pump which was the answer to New Orleans' need for large capacity, low head pumps for its drainage system. At the time, it was the largest of its kind in the world. A short time later, he invented "flapgates" to stop water from backing up when the pumps were stopped. These flapgates soon became the industry standard. In about 1912, Wood invented a hydraulic meter testing machine. At a later date, he conceived of 'half-soling' sewer pipes which were worn through on the bottom due to constant use. This latter invention resulted in substantial savings for the Sewerage and Water Board (Thompson n.d.:11, 1973:43).

In 1912, the City of New Orleans recognized its urgent need for increased drainage pumping station facilities. Wood offered to design a special pump, and in 1913 presented plans for the twelve-foot Wood Screw Pump. He gave the Sewerage and Water Board perpetual rights to use the design (Thompson n.d.:11, 1973:43). The pump

> consists of a syphon in the summit of which a screw type, steel bladed impeller rotates. The casing is split horizontally to facilitate access to the interior of the pump. The pumps were placed at the summit of a pipe syphon and pipe connections are made to the suction and discharge canals without the intervention of valves or gates. Priming is accomplished by means of rotary vacuum pumps. By admitting air to the casing before stopping the pump the vacuum is broken and the water prevented from syphoning back into the suction basin (Thompson n.d.: 11, *sic.* throughout).

Wood's twelve-foot screw pump was the largest and most powerful in the world, and it attracted the attention of engineers both in the United States and abroad. However, controversy arose in New Orleans concerning whether an in-house design should be adopted rather than a design that resulted from an advertised bidding process. The Sewerage and Water Board recommended that Wood's design be accepted, and Mayor Behrman and the City Council did so. A contract for $160,000 was awarded to the Nordberg Manufacturing

Company to build thirteen of the twelve-foot pumps (Thompson n.d.:12-13, 1973:43).

Four of the pumps were installed and tested in 1915. The tests were performed by the Dean of Tulane's Department of Technology, Professor W.H. Creighton. He reported that the pumps were remarkably efficient and stated

> that the pump is larger than any centrifugal pump ever built and among the largest screw pumps, being 12 feet in diameter of horizontal type, designed to give 225,000 gallons per minute against a 7 foot lift at 75 RPM and to work at this constant speed driven by a 600 hp synchronous motor for any lift from 0 to 10 feet... while the Wood Screw Pump surpasses in efficiency, under normal conditions, those of previous installations, the superiority is much greater just when the greatest service is required. Emergency service is probably the weak point of the old pumps. It is the forte of the new... results show that the pumps easily answered all requirements and that *they are the largest and most efficient low lift pumps in the world* (W.H. Creighton, quoted in Thompson n.d.:14, emphasis added).

In 1916, Wood patented his Trash Pump which revolutionized the sewerage system in New Orleans and throughout the world. He designed it to solve the problem of rags and trash, which were being introduced into the sewers and clogging the system. The invention alleviated the need for on-site attendants to unclog the screens needed on the pumps then in use. As a result, New Orleans' sewerage system was the first in the United States to become automatically operated (Thompson n.d.:15, 1973:43). This revolutionary pump works in the following manner:

> Sewage is not screened before entering the Wood Trash Pumps as they allow the passage of objects as large as a 12 inch diameter ball without impairing the efficiency of the pumping mechanism, and the pump operates efficiently when handling water carrying rags and other debris that would cause ordinary pumps to

> clog and stop. The impeller design is the feature of this centrifugal pump. It is known as an enclosed side, suction type impeller enclosed in an involute housing. The impeller is free of sharp corners which would catch fibrous material... Instead of many sharp blades they had but two rounded blades on the runners. There was no sharp edge on which a bit of trash could find lodgement (Thompson n.d.:15).

The new pumps functioned extremely well. Three years after installation, a report stated that:

> Unscreened sewage is pumped by them with a higher efficiency than clear water by the original sewage relifting pumps, and there has not been a single case of pump obstruction or decrease of pump efficiency due to trash clogging (Thompson n.d.:15).

Wood's sewerage pump design became the industry standard:

> Up to a little over ten years ago, more or less standard water pumps with closed or open impellers were used for pumping sewage. Because of the comparatively small passages through the impellers, clogging occurred and satisfactory operation was obtained only by screening the sewage fairly fine before it entered the pumps.
>
> ...However, there are in some cases objections to the use of screens with close spacing and a pump that can handle practically unscreened sewage has been demanded. *A little more than ten years ago such a pump was put on the market by the Fairbanks-Morse Company using a design originated with A.B. Wood of New Orleans.* The overhung impeller of this pump was of the single suction type, with two vanes, the thickness of which diminishes from center to periphery [Figure 14, this report]. The width of the impeller passages was such that spheres one to two inches smaller in diameter than the discharge nozzle could go through the pump. In response to the increasing demand for so-called non-clogging

> pumps, most pump manufacturers undertook the development of such pumps, giving them various trade names such as "Freeflo," "Clogless," etc. Except for varying design of details, all of these pumps are similar, with overhung, single inlet impellers having wide passages for the liquid...
>
> The most vital part of a sewage pump is unquestionably the impeller... (Peterson 1938:214, emphasis added).

When Hamilton, Ontario built a new sewerage pumping station in the early 1930s, use of Wood trash pumps eliminated the need for screens (Wilson 1932:21-22). Similarly, non-clogging pumps were used for the 1933 World's Fair in Chicago (Municipal Sanitation 1932:502) and for an underground sewerage pumping plant in Los Angeles that was reported on in 1935 (Municipal Sanitation 1935:295). These are only a few examples of systems that had adopted Wood's design by the 1930s:

> Due to this improvement in design and construction it is now possible to secure centrifugal sewage pumps that will pass solids about one pipe size smaller than the pumps and give very little trouble from clogging and at the same time maintain efficiencies of from 40 percent for the smaller size to 65 percent for the larger sizes. As a result, centrifugal pumps are now being used for nearly all sewage pumping except where special conditions make some other type desirable (Municipal Sanitation 1938:48).

Even today, "The so-called 'nonclog pumps' are all based on an original development of Wood in New Orleans..." (Karassik et al. 1986:9.28)

During construction of the Inner Harbor Navigation Canal in the second decade of the twentieth century, Wood developed a special trash pump for use by G.V. Goethals and Company, which was the contractor for dredging the canal. The company had previously served as consulting engineers for construction of the Panama Canal. They were using the same type of dredging equipment which had been employed to create Gatun Lake in Panama. The pumps were centrifugal pumps equipped with runners. They chopped up solid matter which was then thrown out along with a stream of water. The equipment worked well at the Inner Harbor site until

three layers of "primeval cypress swamps, one on top of the other," were encountered. The equipment in use successfully cut through the wood, but then the solid material piled up on the runner blades, thereby clogging the pumps. It was necessary for workmen to clean the pumps, which reduced the daily rate of dredging from about 75 feet or 80 feet to 20 or 25 feet (Thompson n.d.:19; 1973:43,74).

Wood designed a special trash pump for Goethals. It was mounted on the dredge boat. During the 44 days prior to installation, 95,000 cubic yards had been dredged. Wood's pump allowed the dredging of 223,000 cubic yards during the 38 days after installation. This resulted in a savings of $221,000.00 (Thompson n.d.:19-20, 1973:74).

Wood was also instrumental in reclamation of the Zuyder Zee by the Dutch government. The Zuyder Zee was a shallow body of water about the size of Rhode Island. Holland sent a representative to meet with Wood about his Screw Pump which was becoming famous. Wood reached an agreement with the Werkspoor Company which was the leading pump manufacturer of Europe and which was headquartered in Amsterdam. The Company received exclusive rights for the manufacture and sale of Wood Screw Drainage Pumps in continental Europe. Wood himself refused to go to the Netherlands, but engineers involved with the project visited him when problems arose (Thompson n.d.:20-21, 1973:74).

Between 1910 and 1920, Wood also served as consulting engineer for a number of projects in the United States. In 1913, his services were engaged during construction of a pumping station to protect North Memphis during flooding of the Mississippi and Wolf Rivers. The following year, Wood designed two 78-inch pumps for Funk Farms Corporation which was engaged in land reclamation at Paradis, Louisiana. In 1917, the Chicago City Water Works appointed Wood as consulting engineer. They paid him a considerably greater amount than did the New Orleans Sewerage and Water Board despite the fact that he remained in New Orleans. In 1919, the Sanitary District of Chicago decided to replace an inadequate sewerage drainage canal with a pumping system. Recognizing that their sewerage problem was similar to that of New Orleans, they engaged Woods' services. By this time he was "...the man the whole engineering world had come to recognize as the authority on heavy duty pumps" (Thompson n.d.:23; 1973:74,76).

Wood was a consulting engineer for many other agencies as well. These included the Memphis District of the Army Corps of Engineers as well as public and private agencies in Chicago, Illinois; Jacksonville, Florida; Ontario, Canada; Milwaukee, Wisconsin; Baltimore, Maryland; and San Francisco, California. He designed pumps for the U.S. Government Docks in Seattle, and served as a consultant for the London Waterworks. Wood Screw Pumps were installed in China, India, and Egypt. However, Wood visited these places only very briefly, if at all, preferring to remain in New Orleans (Thompson 1973:76).

After a severe downpour in 1927, the New Orleans Sewerage and Water Board decided to double its drainage capacity. Wood designed a fourteen-foot version of his Screw Pump, and the first of these was completed in 1929. It was the largest pump in the world. It was cast in the Dibert, Bancroft, and Ross Foundry, and it was the largest casting ever made in New Orleans. It had a capacity of one million gallons every five minutes. (Thompson n.d.:24-25, 1973:76). These pumps remain the heart of the present-day drainage system for the City of New Orleans, and they may well represent Woods' greatest engineering achievement.

Wood died in 1956. The Sewerage and Water Board adopted a resolution of regret which included a biographical summary and tribute:

> Many honors were conferred on Mr. Wood during these years. The young Men's Business Club presented him with a silver membership and in 1955, citing him for having made outstanding contributions to the welfare and development of New Orleans through the invention of various heavy duty water pumps and other hydraulic needs of our community; prior to this, in 1939, Tulane University, his alma mater, awarded him the degree of doctor of engineering; in 1940, the Chamber of Commerce presented him a plaque for his outstanding civic work; and in 1954 the City of New Orleans presented to him a plaque in honor of his 55 years of service with the board.
>
> His was a life of achievement and usefulness. That public, private, technical and educational groups paid

> tribute to him testifies to his important role and indicates the degree of New Orleans' loss. He rendered our city one of the greatest services it has ever received from an individual.
>
> Our present water, sewerage and drainage systems stand as a monument to his genius and guidance throughout the years of his service. The principles of design and the policies of operation that he created in the Sewerage and Water Board will continue to live, and the shadow of his influence will continue to inspire and guide us for years to come (S&WB 114:11).

The annual report of the new General Superintendent E.F. Hughes began with the simple but eloquent statement that "The sudden death of Mr. Albert Baldwin Wood on May 10, 1956 brought to an end an era of engineering ingenuity" (S&WB 114:13).

James Wadsworth Armstrong

James Wadsworth Armstrong was the architect of Pumping Station B and all of the other New Orleans Sewerage and Water Board buildings designed before 1910. Unfortunately, little is known of his early life and professional training. However, based on documented aspects of his career in New Orleans and Baltimore, it appears that he may represent an important figure in the history of American public works.

The Who's Who in Engineering indicates that he was born in 1868 in Elsa, Illinois. His obituary notice in the Baltimore Evening Sun (October 212, 1953) indicates that his birthplace was Cedar Rapids, Iowa. By 1889, Armstrong was working as an assistant engineer on a street railway. In 1894 he spent two semesters as a special student at the University of Illinois. While there he took courses in engineering, drawing, sanitary construction, theoretical and applied mechanics, wood construction, bridge analysis, and architecture.

It is possible that Armstrong's courses in architecture were under the direction of Nathan C. Ricker, who was one of the pioneer architectural educators in the United States (University of Illinois Archives, Student Ledger Books 1868-1903). Ricker modeled the second American architecture program in the United States not on the French Beaux-Arts or fine arts

system, the source for most other schools, but on the German polytechnical universities with their inclusion of architecture in an engineering curriculum and an emphasis on technology. Although the source of Armstrong's considerable design ability is unknown, the time he spent at N.C. Ricker's architecture and engineering school, even at the advanced age of 26, must have been important.

Either before or after his year at Illinois, or both, Armstrong was a survey and topography draftsman. He came to New Orleans in 1899 to work for the Sewerage and Water Board. Three years later, Superintendent Earl placed him in charge of pumping, power, and purification plant design because he had "the proper combination of experience in steel structural work and of taste in color, form and appearance to undertake this part of the Board's work" (Earl 1918:6). This combination of experience represented the professional range which Ricker wished to provide in his school.

Prior to 1909, Armstrong provided the architectural design for all of the New Orleans buildings that were used for pumping sewage, pumping water, and purifying water, as well as the associated power stations (Earl 1918:6). In 1910, he moved to New York. With Hering and Fuller, he worked on water purification plants in Grand Rapids, Michigan (or Cedar Rapids, Iowa, according to the above-cited obituary); Minneapolis, Minnesota; and Montreal, Canada. Each of these plants was larger than the last. The plant at Cedar Rapids had a 20-million gallon capacity, while the one at Montreal had a capacity of 60 million gallons. In 1911-1912, Armstrong worked with the George W. Fuller Company as a water and sewerage engineer. From 1912 to 1937, he worked for the Baltimore City Water Department. In Baltimore, he designed the Montebello filtration plant, begun in 1915 and having a capacity of 128 million gallons. He also designed a second plant in 1928, as well as a major dam and reservoir. The Montebello plant (Figure 18), which uses some of the Italianate architectural language of the New Orleans buildings but surfaces it in brick and details it in a manner which is more French classical than Mediterranean, is recognized as an architectural monument. Postcards of the plant, labelled "Architectural Baltimore" (Figure 18), can be purchased, and an original drawing along with a bird's-eye view have been published recently by the Baltimore Public Works Museum to remind citizens of a time when "architectural excellence was important to creating confidence and pride" (Highlights in Public Works

Architectural Baltimore

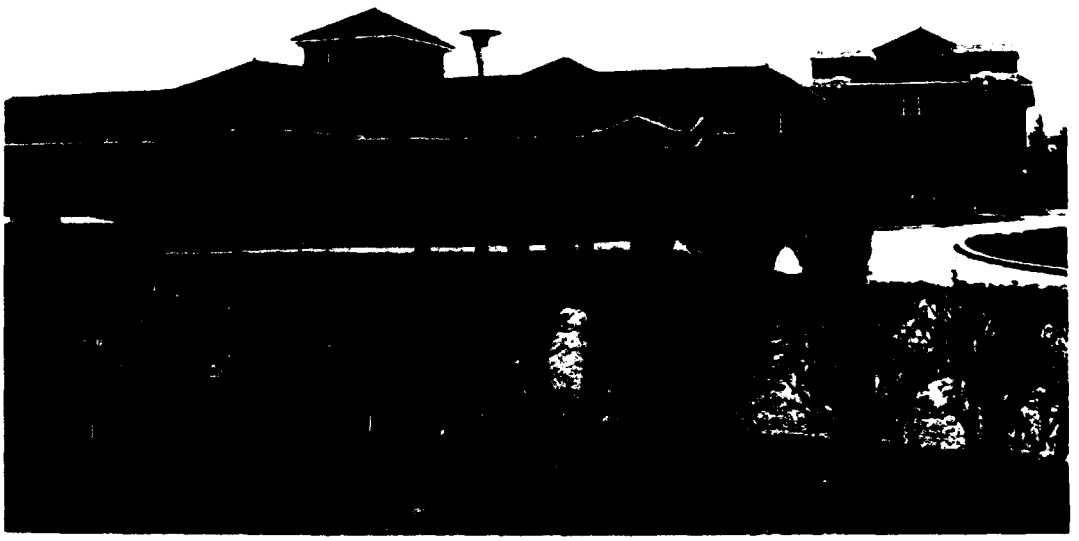


Figure 18. Two views of the Lake Montebello Filtration Plant No. 1.

History 1988). Figures 18 and 19 are copies of photographs showing several views of the facility. Later in his career, Armstrong designed a purification plant in Washington, D.C. That plant may be the Calecarlia complex near the Potomac River in the northwest part of the city, but this is uncertain. Armstrong retired in 1937, and moved to Brandenton, Florida, where he died in 1953.

Public works history is a relatively new field. The history of city water systems and sewerage systems, from either a technical or architectural perspective, has not yet been written. Data obtained in the course of this study indicate that J.W. Armstrong, in addition to his work in New Orleans, was responsible for designing a number of facilities in the United States and Canada. It is possible that when a history of public works related to water and sewerage is undertaken, Armstrong will emerge as an important figure. His earliest designs are still extant in New Orleans, and a comparison of these (Figures 1, 2, 3, 4, 5, 20, 21, and 22) with his design for the Montebello Plant (Figures 18 and 19) indicates that at least some of his later work represented a development of ideas that were first used in New Orleans.

Figure 19. Additional views of the Lake Montebello Filtration Plant No. 1.

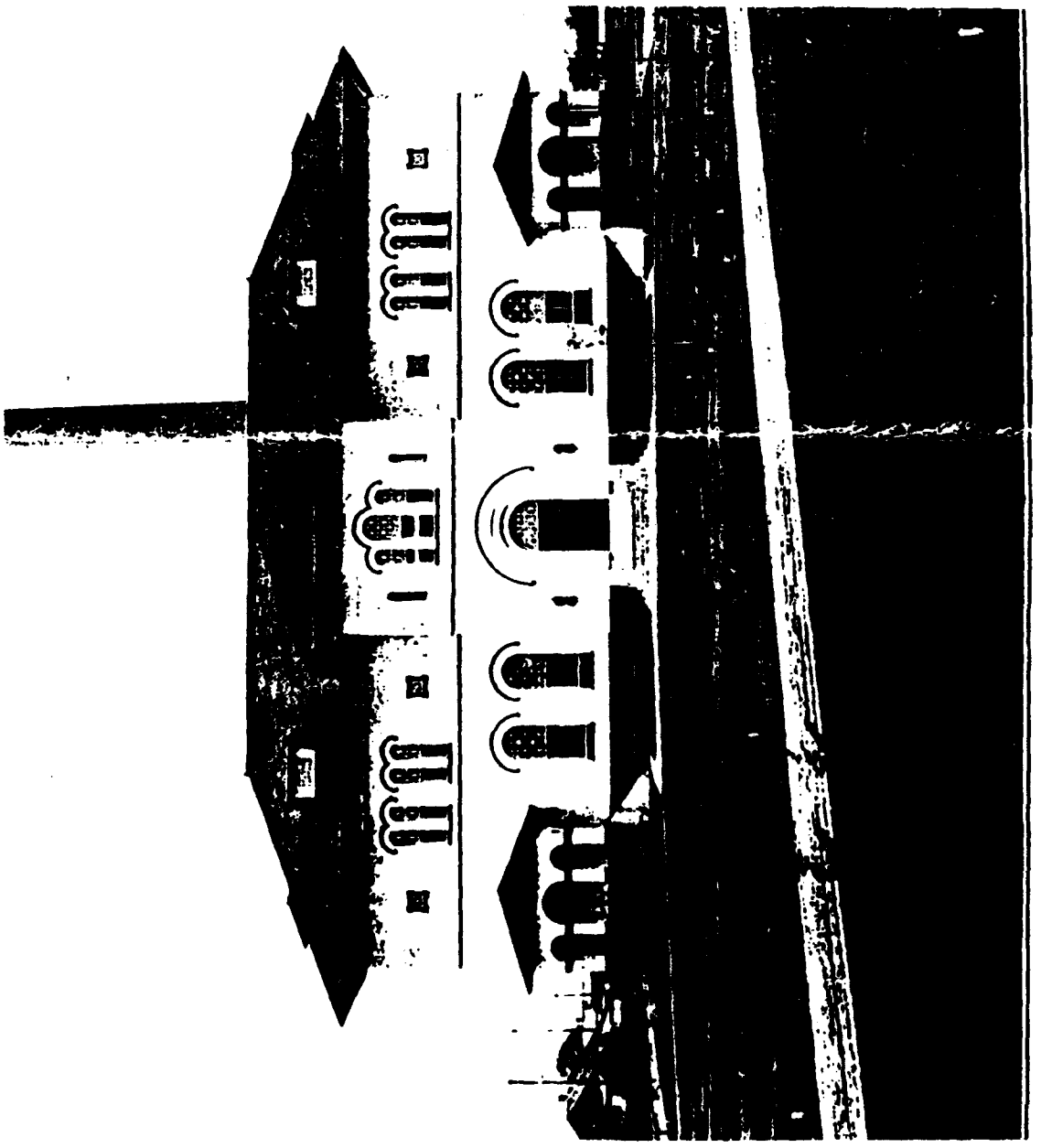
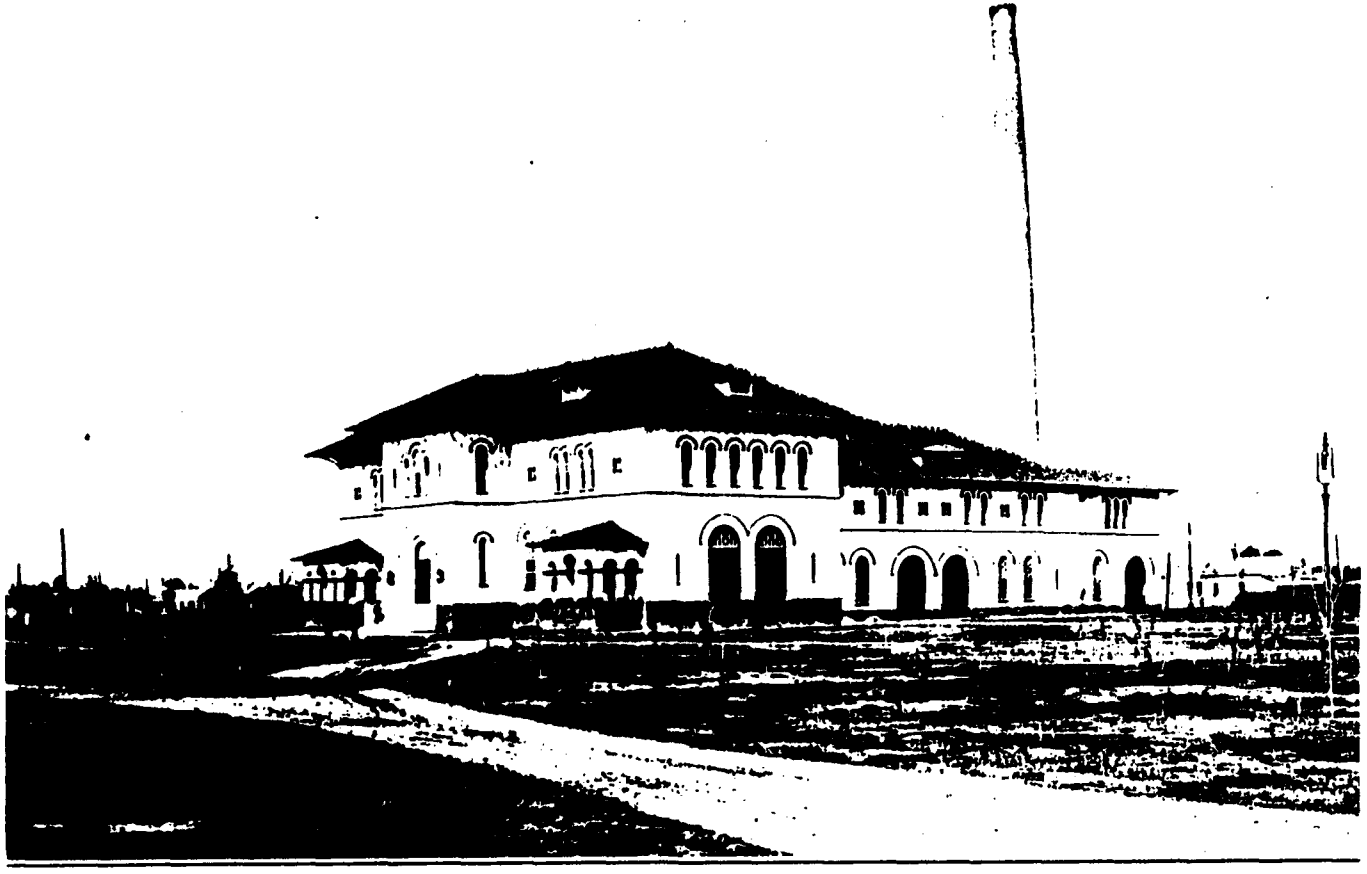
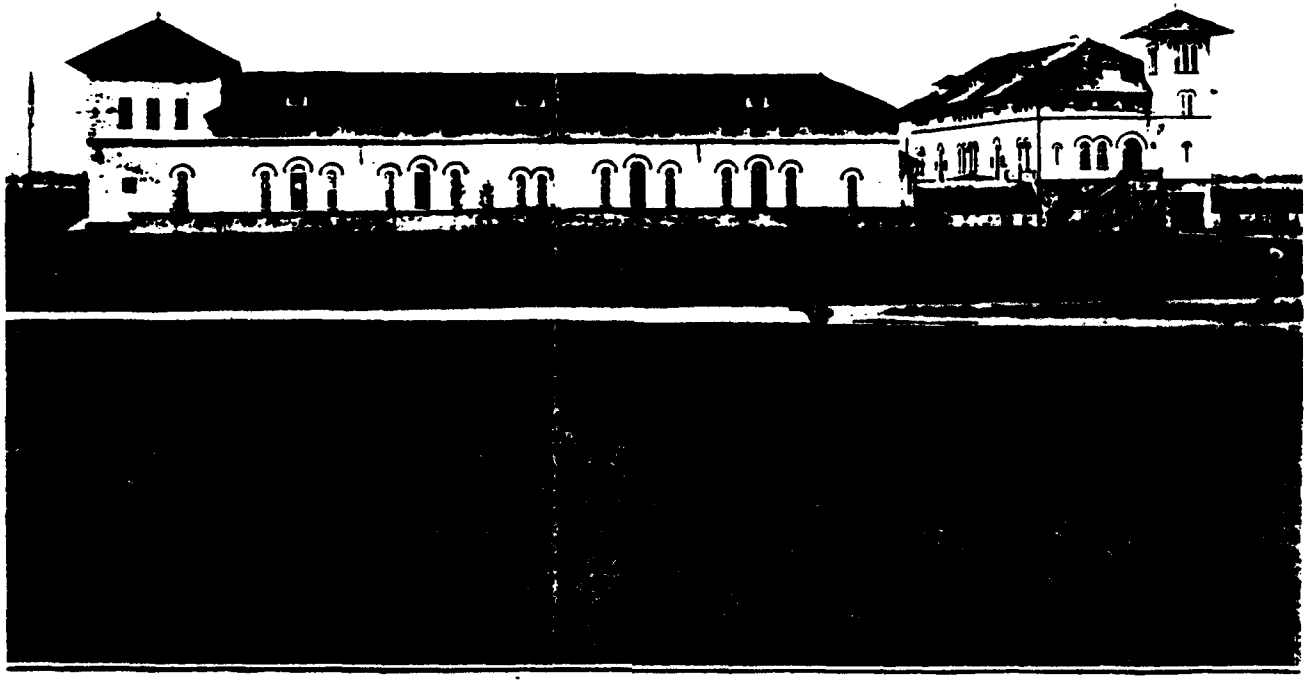


Figure 20. Photographic view of the front of the Main Pumping Station at New Orleans' Water Purification Plant in 1910 (reproduced from the New Orleans Sewerage and Water Board's 21st Semi-Annual Report). The building was designed by J.W. Armstrong.



MAIN WATERWORKS PUMPING STATION Southeast View.

Figure 21. Southeast view of New Orleans Main Waterworks Pumping Station in 1910, also shown in Figure 20 (reproduced from the New Orleans Sewerage and Water Board's 21st Semi-Annual Report). The building was designed by J.W. Armstrong.



Filter Gallery and Filters. Head House.

Figure 22. View of the Filter Gallery, Filters, and Head House at New Orleans' Main Water Purification Plant in 1910 (reproduced from the New Orleans Sewerage and Water Board's 21st Semi-Annual Report). The building was designed by J.W. Armstrong.

CHAPTER 6
NRHP EVALUATION OF SEWERAGE PUMPING STATION B

Architectural and Engineering Description of Sewerage Pumping Station B

The superstructure of Sewerage Pumping Station B was completed by 1907, and the station became operational during that same year. The station was equipped and operating by the early fall of 1907. The structure was designed by J. W. Armstrong, the engineer responsible for designing all of New Orleans' pre-1910 sewerage and waterworks stations and purification plants. The construction of Station B was undertaken by W. M. Wren and Company.

The station, which retains its original color scheme, stands alone on a block bounded by St. Claude, Sister, Marais, and Jourdan Streets. The station and its concrete yard are surrounded by a chain link fence. The yard and fence were added in the late 1970s. The rest of the block is a grassy lot. Originally, there was a small shed behind the station and a superintendent's house to the east of it. These associated structures were also shown on the 1937 *Sanborn Insurance Map*. They were removed sometime between 1937 and the present.

Sewerage Station B is a two story, octagonal building with a one story, rear wing (Figures 23, 24, and 25). The structure features a stucco wall treatment over brick that is accented with a reddish trim. The specifications called for terra cotta trim, but it appears to have been made of concrete with an integral dye. This appears to represent a difference between the plans and the "as built" structure. The station is encircled by a high watertable.

The roofs of both sections of the building are clad in asphalt shingles and display exposed rafter ends. The roofs were originally covered in red tiles. The front and side planes of the octagon each display a round arch accented in trim and resting on pilasters crowned by simple capitals. The slightly recessed area under each arch contains either a round-arched window or, in the case of the front plane, a double-leaf, round-arched door. The present-day metal doors are replacements for the original, wooden doors. The original doors (Figure 26), as shown on the 1904 blueprint specifications, were flat topped with a round-arched fanlight above them. This fanlight and the upper

Figure 23. Sewerage Station B, view looking north.

Figure 24. Sewerage Station B, view looking northeast.

Figure 25. Sewerage Station B, view looking west.

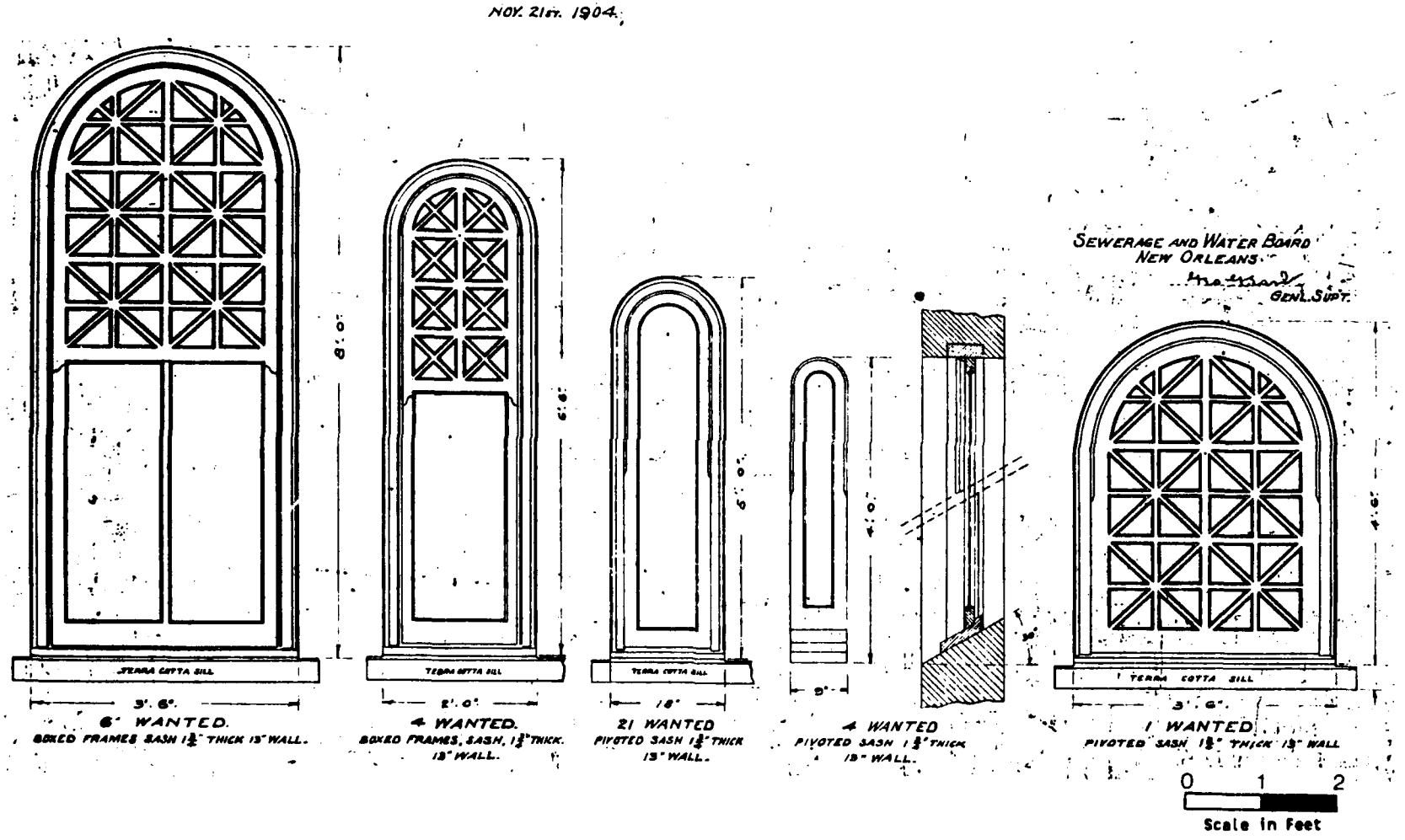


Figure 27. Detail of window frames and sashes in the 1904 plans for Station 13.

sashes of the first story windows were accented by muntins in a clathri-like pattern (Figure 27). Two of these early windows are still extant, but the other round arched window openings contain louvers.

On the second story, above each arch, are triads of narrow, round-arched windows which are either boarded up or contain louvers. Originally, these window spaces contained pivoted, single-light windows (Figure 27). All of the windows have lugsills. On the rear elevation, an exterior stuccoed chimney rises above the hip roof of the wing and pierces the main roof. Plans for the building had specified brick corbelling. The chimney is now shorter and much plainer than the construction plans indicate. No historic photographs obtained for this study showed views of the original chimney so no determination could be made concerning whether the present chimney is a replacement or an "as built" modification to the original design plans.

The original plans for Sewerage Station B specified that the rear wing feature a window treatment similar to that found on the octagonal section of the building. An early photograph from 1906 shows the Sister Street side of the building. Attached to that side of the wing, at that time, was a rough, lean-to shed. Because of the presence of this shed, the windows cannot be seen in this photograph. Another photograph accompanying the second semi-annual report from 1909 shows the front and Jourdan Street elevations (Figure 2) of the building. It clearly illustrates that this side of the wing featured a trio of double hung sash, round-arched windows. The upper sashes display muntins in a clathri-like pattern. This trio of windows is flanked by narrow, round-arched windows. This side elevation of the wing (and perhaps the other side elevation) has had its windows stuccoed over at some point since 1909. The only opening now found on the wing is a round-arched entrance containing a single-leaf, aluminum door that is located on the rear elevation.

The engineering aspects of Station B are relatively simple. Two 24-inch Wood trash pumps with drive motors and associated controls are present. When the water coming in from the sewers gets high enough, a float mechanism turns the pumps on, and when it decreases the mechanism turns them off. There are valves on the inlet and outlets of the pumps to allow them to be isolated and check valves are present to prevent backflow under unusual conditions. A new addition, which does not

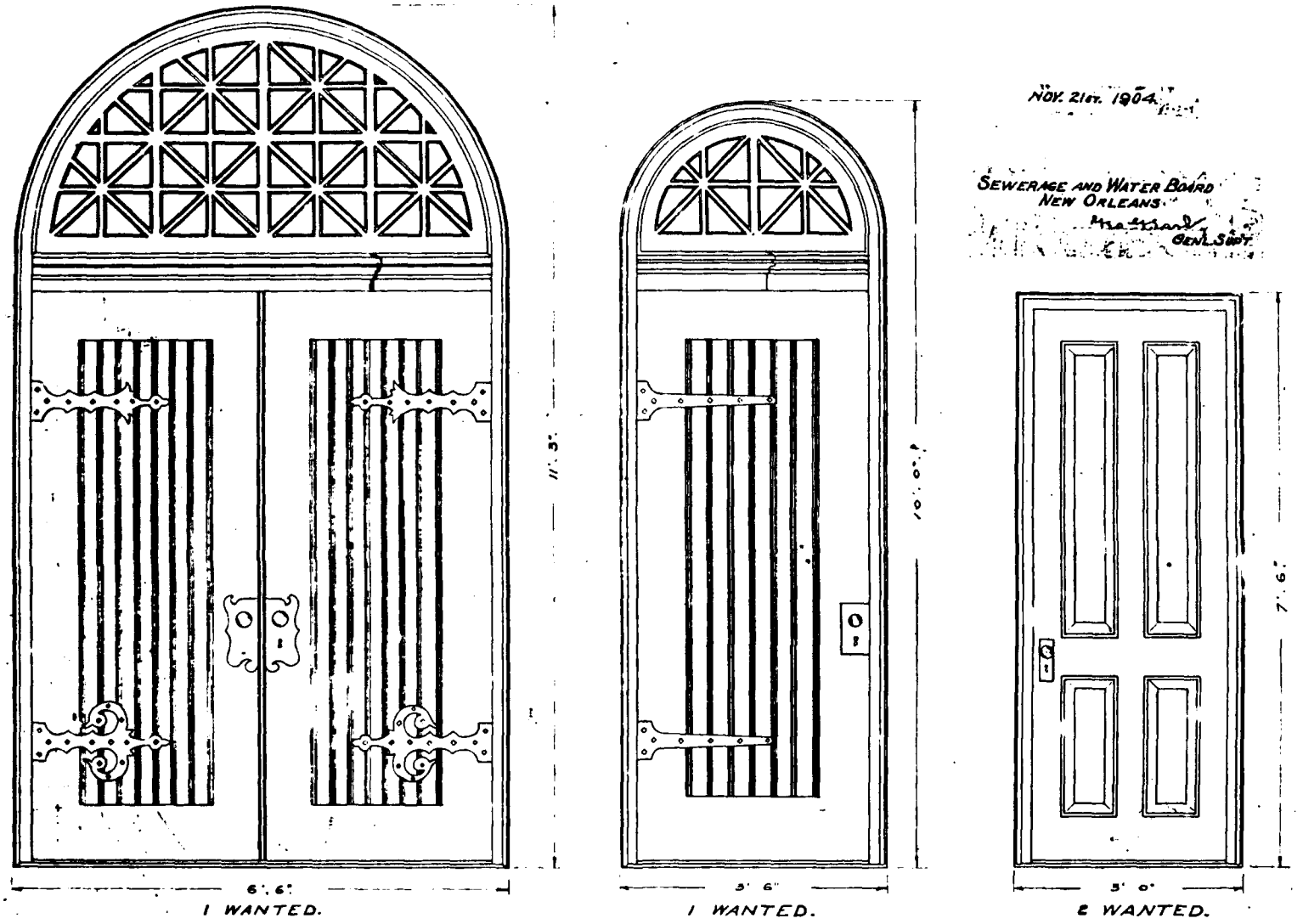


Figure 26. Detail of doors in the 1904 plans for Station 13.

affect the station's integrity, is the addition of other valves which allow the outflow to be piped to the new treatment plant rather than the river. The old valves could be used to divert outflow to the river should an emergency make it necessary, but the present operational procedure calls for any diversion to take place at the treatment plant. A cleanout is provided for the pump sumps by means of a two-inch connection to city water so that it can be flushed. This simple arrangement is possible because the pumps will not clog with trash.

Two of the original pumps remain in place without motors and are considered spares. These are the predecessors of the trash pumps designed by A. Baldwin Wood. They had been installed and were operational by 1907. Also present are the two Wood trash pumps installed in about 1930 and still in use. Two 275-horsepower Westinghouse motors are present. They were installed at the same time as the Wood trash pumps. Some rewiring of the motors has been done by Westinghouse.

Evaluation of the Integrity of Sewerage Pumping Station B

Sewerage Pumping Station B is an example of one of the structures built by the New Orleans Sewerage and Water Board during the first decade of the twentieth century. Structures associated with sewerage pumping were built in the Mediterranean style. Stations A, C, 14, and 15 are other structures that represent the same style and the same period of construction. With Station B, these structures were the first sewerage pumping stations built by the Board. The only other sewerage pumping stations (Nos. 1, 6, 8, and 9) that date to the first decade of the twentieth century were built entirely below the ground so that there is no architectural component.

The Sewerage and Water Board's articulation of the Mediterranean style of architecture as expressed in these five stations was characterized by thick, stuccoed walls supporting low pitched roofs clad in red tiles. The walls were punctuated by round arched openings containing either windows or doors crowned by fanlights. The upper sashes of the windows and the fanlights displayed muntins set in a decorative, clathri-like pattern. The sophisticated design was appropriately applied to both large (Stations A and C, Figures 1 and 3) and small structures (Stations B, 14, and 15; Figures

2, 4, and 5) and those with either symmetrical or asymmetrical massing.

Some changes have been made to the exterior of Station B. Nevertheless, the building retains its architectural character. The major alterations to the structure are: (1) the roof is now covered in asphalt shingles; (2) the majority of the windows have been replaced by metal louvers and those on the rear wing have been stuccoed over; (3) the original wooden doors with their fanlights have been replaced by taller, metal doors, and the fanlights have been removed; (4) the chimney has apparently lost its brick corbelling. In regards to the chimney, early photographs of the structure examined to date do not include views of the chimney.

Similar changes have also been made to Stations A, C, 14, and 15. All of the stations except for Station 15 at 2431 Palmyra Street, have had their red roofing tiles replaced by asphalt shingles. All of these stations have had at least some of their windows either covered over or exchanged for louvers. Station C still retains most of its original windows. Most of the stations have had their original doors replaced by metal doors and have lost their fanlights. The fanlight for the entrance of Station A has been boarded up. The doors of Station C were open and not visible from the street during the examination reported here. However, the front entrance of Station C does retain its fanlight. The two entrances on the east (side) elevation of Station C have had their fanlights boarded up. Station C has a large, modern addition on its west (side) elevation. Station 15's shed roofed addition is on the side of its rear wing. In addition, the original color scheme for this latter station was altered when its trim was painted blue. In short, alterations have been made to all of the five original sewerage pumping stations in New Orleans.

Despite the alterations discussed above, Sewerage Pumping Station B retains its original architectural character. Its massing and form have not been changed. The structure has not received any additions. The building's original color scheme is still extant. The heavy, stuccoed walls and round arched openings inherent in the Mediterranean style are still present on Station B. The original concrete trim which articulates the structure's round arches and octagonal form can still be seen.

Although Sewerage Station B has lost some of its architectural details, it still retains sufficient integrity to represent an important example of a locally significant building type that is associated with New Orleans' early-twentieth-century sewerage system as well as with the city's architectural history during the same period. This becomes especially apparent when Station B is compared to its "sibling" stations (A, C, 14, and 15). Station B exhibits as much, if not more, architectural integrity as these other stations. It thus serves as a tangible link to the early history of New Orleans' sewerage system.

It should be noted that the guidelines of the National Park Service (1982) for evaluating integrity state that:

> All properties change over time... It is not necessary for a property to retain all the physical features or characteristics that it had during its period of significance... A property important for its illustration of a particular style must have retained most of the physical features that compose that style to be eligible. For example, while it may have lost some detailing or a limited amount of historic materials, the property must retain the majority of the features that are essential to illustrate the style in terms such as massing, spatial relationships, proportion, pattern of windows and doors, texture of materials and ornamentation (National Park Service 1982:40).

Also,

> A property important for its expression of architectural design and construction technology is eligible if the principal features of its design and construction are sufficiently intact to convey that significance (National Park Service 1982:39).

And

> A property that is significant for its historic association is eligible if it retains the essential physical features

> that made up its character or appearance during the period of its association with the important event, historical pattern, or person(s)... (National Park Service 1982:39).

It is recommended below that Sewerage Station B should be considered significant in terms of association (Criterion A), architecture (Criterion C), and engineering (Criterion C). In regards to retention of integrity from the period of significant historic associations, the National Park Service (n.d.) recently provided an example of a property which had been somewhat changed but which was nevertheless included in the National Register. The property was a house built in 1874 and 1875 and which was associated with a person of historical importance. Changes to the property included replacement of a full-length porch with a smaller porch; replacement of all of the original six-over-six, double-hung sash windows with one-over-one thermal pane aluminum sash windows; removal of window openings on the rear end elevations; and reduction of the size of the central, second story window opening. These changes are comparable to those on Station B. The National Register nomination form for the house under discussion stated in regard to these renovations that:

> Though there have been both historical and more recent modifications to the Knight House, the building continues to convey its historic period. The proportion and organization of the facade, basic plan and mass, size and shape of window and door openings, and siding of the residence remain... The more recent changes were made in a practical attempt to weatherproof the building and add the necessary electrical service and plumbing (National Park Service n.d.:23-24).

In its commentary on why the property was acceptable for listing in the National Register despite some modifications, the National Park Service (n.d.:24) stated:

> The need to "weatherproof" buildings does not exempt a property from National Register standards for historic integrity, and in some properties, the modern alterations might impair historic integrity to the degree that the buildings no longer convey a strong enough sense of their past associations to meet

> National Register criteria. The Knight House retains sufficient integrity of materials, design and workmanship, as well as location, setting, feeling, and association to meet National Register standards. The house retains its overall form and plan, its exterior materials, the fenestration pattern, simple design, and historic ell (National Park Service (n.d.:24).

Again, this example provides a direct parallel with Station B. Although some windows and doors have been changed on the station, as has the roofing material, the structure still conveys a strong sense of its past association. Also, it retains its overall form and plan, its exterior materials, and with the exception of the rear portion, it retains its original fenestration pattern.

In terms of engineering, as well as architectural design, Sewerage Station B retains its historic integrity. Two of the original centrifugal pumps remain in place, although these are no longer used. Also, two Wood Trash pumps that were probably installed in ca. 1930 are present. These are still in use. The ca. 1930 changes made to the station in order to increase its capacity were the last major renovations made. These changes consisted of the installation of new pumps and new motors. The original 1904 plans were drawn with this installation in mind. Also, until those changes, few if any modifications had been made to the station since it was built during the first decade of the twentieth century.

Statement of Architectural Significance (Criterion C)

Sewerage Pumping Station B was built in 1905-1906. The building was designed by J. W. Armstrong. His career, to the extent it has been documented, was summarized in Chapter 5. It is clear from that summary that Armstrong may be an important figure in the history of American public works. In addition, the buildings he designed in New Orleans and Baltimore, including Station B, represent "the work of a master" architect (Criterion C). Also, the pre-1910 New Orleans sewerage pumping stations, including Station B, "...embody the distinctive characteristics of a type, period, or method of construction..." (Criterion C). For these reasons, it is recommended that Sewerage Station B be considered eligible for inclusion in the National Register of Historic Places.

Armstrong's fresh, innovative interpretation of the Mediterranean style was a conscious attempt to forge an identity for the Sewerage and Water Board. In a 1906 bid proposal for two water purification plants, the specifications stated that the color of the terra cotta trim shall be "uniform and similar to that used on the Sewerage Pumping Stations." Armstrong's buildings drew "favorable comments from nearly everyone..." and did not cost any more than "the more usual type of building found on similar works in many other cities" (S&WB 18:41). This identity is still preserved today as new sewerage stations are frequently designed in the same style. The fact that the same style is being maintained for new buildings argues for the success of the architectural design developed during the first decade of the twentieth century.

The Mediterranean style of architecture developed out of the Mission and Spanish Eclectic styles. California architects in the 1880s and 1890s were inspired by the extant missions from their Spanish colonial past in designing new buildings. The Mission style was disseminated throughout the United States in pattern books and magazines. It blossomed into the Spanish Eclectic and Mediterranean styles as ornamentation was added. Inspiration for these architectural details came from cultures along the Mediterranean Sea. These styles were generally found in areas that had once been Spanish colonies. The Mediterranean style was popularized after 1910 and was utilized up through the 1930s.

Most of New Orleans' examples of the Mediterranean style are either houses or apartment buildings. Some of the best local interpretations of the style are located in the Jefferson City portion of New Orleans -- an area bounded by Claiborne Avenue and the Mississippi River, Toledano and Joseph Streets. An "Americanized" version of the style is a little more restrained in its architectural details. This version featured a low pitched, hip roof clad in clay tiles and wide, overhanging eaves with brackets or exposed rafter ends. Its wall surfaces were usually stuccoed. Its upper windows were small and deeply recessed, often a casement type. The lower openings were arched. The entrances were articulated by classical columns, pilasters, or Spanish Renaissance details. Most of the extant Jefferson City examples date from 1910 to 1930. These include 4 and 6 Blanc Place, 1424 Cadiz, 1550 Dufossat,

1668 Jefferson, 2636-38 Octavia, and 1636 Valance (Schlesinger et al. 1989:89-90).

Sewerage Pumping Stations A, B, C, 14, and 15 appear to be among the earliest examples of the Mediterranean style in New Orleans. They were constructed and in operation by the fall of 1907. These Mediterranean style buildings of the New Orleans Sewerage and Water Board featured a stucco wall treatment with contrasting trim and were crowned by either hip or octagonal roofs clad in clay tiles. The round arches of the buildings' windows are repeated in the round arched details found on the exterior walls. Of the stations, B, 14 and 15 are octagonal. Both stations B and 15 have rear wings. Station 14 does not have a rear wing, but is a one story structure as is Station 15. Station B is the only two story, octagonal sewerage pumping station in the system. Stations A and C display the same ornamentation as the octagonal buildings, but are rectangular in form with various projections. On each of these latter two buildings, a band of small, rectangular windows is located below the eaves.

One impressive aspect of the buildings, when viewed together as representatives of a type and style, is the manner in which the architectural language (the arches around the windows, the hipped roofs, the lattices, wall thickness, stringcourses, and watertable) works on both the large and complex examples (Stations A and C) as well as on the smaller examples (Stations B, 14, and 15). Also, great variety was expressed even on the smaller buildings. At the same time, a consistent institutional image was created and maintained. An excellent, sophisticated design sense is shown in the overall proportions and massing of the buildings as well as in the balance of openings, flat walls, and architectural detail within each building. The modesty and good design sense displayed in these buildings, which exhibit a timeless quality, are design values normally found only in vernacular architecture.

Although the architect is not well known, his work in designing these buildings demonstrates both talent and excellent training. In terms of the National Register criteria, the buildings represent the "...work of a master... [by] illustrating the technical and/or aesthetic achievements of a craftsman" (National Park Service 1982:22). Although a "master" is often defined as "a figure of generally recognized greatness in a field," a master can also be defined as "a known

craftsman of consummate skill, or an anonymous craftsman whose work is distinguishable from others by its characteristic style or quality" (National Park Service 1982:24). J.W. Armstrong, because of his design achievements for the New Orleans Sewerage and Water Board, should certainly be considered a "master." Also, it is likely that Armstrong will be recognized as an important figure in the field of public works when a definitive history of American public works related to sewerage and water purification is composed.

Armstrong's architectural achievement was recognized by the editor(s) of the Building Review in 1918:

> Apart from the unity found existing in a few architectural groups in New Orleans, such as Jackson Barracks, Place d'Armes, Loyola University, Newcomb College, and the Cotton Warehouses and Terminals, the single greatest achievement in unity of architecture in a group of structures, which by their nature it was impossible to group together, is found in the pumping plants and filtration buildings of the New Orleans Sewerage and Water Board.
>
> ...The fact that the Sewerage and Water Board, in the midst of its great engineering problems, did not neglect the architectural possibilities that lay in its power to develop for its buildings, is not the least of the things which but add to the value of its work to the present and future city. The influence of its architectural efforts ha extended itself to other cities, and similar attempts along the same lines have followed elsewhere, patterned after the New Orleans manner (Building Review 7:6).

The editors described the buildings' style as "well adapted to New Orleans" and said that it "..expresses the local architectural tradition and feeling so well..." (Building Review 7:6). The cover of the issue of Building Review which is quoted here featured photographs of Stations B and 14 rather than the much larger Stations A and C. Thus, even during the second decade of the Sewerage and Water Board's activity, its buildings were recognized as an architectural achievement.

Superintendent Earl wrote of the development of the style of the buildings by J.W. Armstrong:

> In working out the plans the first and main thing was to provide structures of the best size and shape to accommodate the equipment necessary in the most advantageous way. Then it was determined what material could be used for the construction of these structures to best economy and advantage, having at the same time in view the desire to make them durable, appropriate for their intended use, and, if possible, of pleasing appearance.
>
> Finally, every effort was made to develop a distinct type of structure which could be carried throughout the entire work, and each individual structure was studied in order to obtain roof lines and form and location of openings that would be of pleasing and consistent effect and would at the same time provide proper light and ventilation without material addition to the cost... (Earl 1918:6).

Station B, taken as a single example of a type and style, represents a significant building. Its significance is increased by its individuality in the context of the four other early examples of sewerage pumping stations in New Orleans. As an architectural entity, it embodies distinctive characteristics by clearly representing its "type, period, or method of construction." In addition, it "...clearly illustrates the pattern of what was common to the class of resources... [and] the individuality or variation that occurred within the class" (National Park Service 1982:22). And finally, as was noted above, it represents the work of a master. It is recommended, then, that Station B as an architectural entity should be considered eligible for listing in the National Register of Historic Places.

Statement of Engineering Significance (Criterion C)

A sewerage system is a relatively simple system requiring only a few components. These include a route for the introduction of wastes and water, conduits to carry the wastes to a central disposal locale, and a sink to receive the wastes. The wastes may be moved either by gravity or pumped through the system by

mechanical pumps. Since World War II, treatment facilities have been incorporated into these systems.

Sewerage systems have been in existence for over two thousand years. However, in cities of the United States and Europe, they did not become common until the nineteenth century. The New Orleans system, in terms of engineering, exhibits one major difference with systems of other municipalities. The New Orleans system operates for the most part below sea level. This creates a driving force for the entrance of ground water and the necessity to force the effluent above sea level for disposal. Also, the system must operate under conditions of a tropical rainfall environment, which taxes its capacity due to infiltration and direct rainfall.

Although these problems are not extremely difficult ones with which to cope, they do pose challenges not faced by systems in most other cities. The low elevation at which the New Orleans system must operate necessitated a series of pumping stations. Such stations were not a part of many other municipal systems in the United States at the time of construction. In fact, Chicago later retained A. B. Wood to design a system with pumping stations because of the economic and efficient operation of the New Orleans system. Also, New Orleans solved the problem of power outages that plagued some systems by designing a system that generated its own power. Although the extent of the influence of the design of New Orleans' system on that of other cities is unknown, the use of pumping stations and the capacity for generating power independently may have been important:

> In 1910, less than 200 wastewater pumping stations existed in the United States. Although the types of pumps employed at that time were essentially the same as those used today, the motive power of the pumps varied...
>
> Even after the use of electricity became common, engineers were sometimes reluctant to use pumping stations because power outages were routine. Problems occurred in many communities where standby power was either not available or not included as part of the pumping station installation. The practice of avoiding the use of pumping stations led

> to the construction of some very deep and costly sewers (interceptors). Today... pumping stations are a common feature of any wastewater collection system (Tchobanoglous 1981:3-4).

The New Orleans system may be described as an interconnected system of sewerage conduits increasing in diameter from about eight inches to several feet. All laterals leading to the main collection pipes are either parallel or perpendicular to the river in order to take maximum advantage of the elevation contours of the land. The smaller conduits lead to increasingly larger conduits as the collection area increases. The slope of the pipes is always downward so that the sewage flows by gravity. When it reaches a level which is unreasonably deep, it is lifted by pumps to a higher level. Stations 14 and 15 were the original intermediate pumping stations that served this function. Eventually, the sewage reaches an outfall station. Originally, the outfall stations (Stations A, B, and C) pumped sewage directly into the Mississippi River.

Because of the configuration of New Orleans, it was necessary to divide the city into several disposal areas served by different effluent pumps. In the first decade of the twentieth century, three stations with effluent pumps were designed and constructed. Station A served the area on the east bank upriver from Lafayette Street, including the business district. Station B served the east bank downriver from Lafayette Street. Station C served that portion of the city located on the west bank. At a later date, Station D was built to serve a newly developing portion of the city closer to Lake Pontchartrain. During the initial construction phase, only two intermediate pumping stations were built. These were Stations 14 and 15. The intermediate stations were automatic. Additional intermediate stations began to be built immediately after the first phase of construction, and some of these were in place during the first decade of the twentieth century.

The sewage material collected by this system originates, for the most part, in residential households. As a result, the Sewerage and Water Board has no control of the introduction points of the system. Many varieties of trash, including cloth, are introduced. At the pumping stations, this trash tends to clog intake screens and jam pump impellers. When New Orleans' system was first built, the only pumps

available were multi-bladed pumps, and clogging of these pumps became a major problem.

Albert Baldwin Wood was the mechanical engineer for the system in the early-twentieth century. He had a concept for a pump design which would revolutionize sewerage pumping operations throughout the nation. His concept was to use a two vaned impeller with large fillets between the inlet and the impeller, and very thick aerodynamically designed vanes. The design allowed for anything which entered the pump to pass through. For example, if a twelve-inch ball entered a twelve-inch pump, it would be passed through without stopping the pump. This design was extremely successful, and all "non-clog" pumps in use today are based upon Wood's development.

In summary, one of the unique aspects of the New Orleans sewerage system is the fact that it operates in an area that is near or below sea level. An efficient system was possible only through the use of a series of pumping stations. A number of these were built during the first decade of the twentieth century. Superintendent George Earl was apparently responsible for the design of the system. His success is indicated by the fact that the system remains essentially unchanged to the present. Original components are still in use, and the only substantive changes to the system are its expansion. The system Earl designed qualifies him as a master engineer.

One other unique aspect of the New Orleans system is that it was here that a revolutionary sewage pump design was introduced. The design would subsequently be used throughout the world. Its inventor, Albert Baldwin Wood, is recognized as an important figure in the history of American engineering for his work on pump design. Although his work on the design of drainage pumps is better known, his invention of the Wood Trash Pump under discussion here was also an important innovation because it made possible automatic pumping stations that functioned well and contributed to the overall efficiency and economy of sewerage systems.

In the course of the present study, the historic integrity of the New Orleans sewerage system as a whole was not evaluated. Only one component, Sewerage Pumping Station B, was the focus. As discussed in a preceding section, historic research and an examination of the station indicate that this component does exhibit the quality of integrity. As an engineering structure, it

is eligible for nomination to the National Register of Historic Places because it embodies the distinctive characteristics of and is a good example of a particular type of engineering structure (sewerage pumping station) and period of construction (early-twentieth century).

In regard to the pumps present in Station B, these should be considered objects in terms of National Park Service (1982) guidelines for applying National Register criteria:

> An object is a thing of functional, aesthetic, cultural, historical, or scientific value that may be, by nature or design, movable yet related to a specific setting or environment (National Park Service 1982:7).

Research reported in this volume indicates that two of the ca. 1906 centrifugal pumps installed in Station B remain in place. These two pumps are objects that appear to be of historical value because of their age and functional significance. The same is true of the two Wood Trash Pumps that appear to have been installed in ca. 1930.

Statement of Associative Significance (Criterion A)

New Orleans built the initial components of its sewerage system, including Station B, between 1905 and 1907. In doing so, city fathers were not only addressing a dire local need, but following a national trend which held officials responsible for the well-being of their citizenry and expected them to conduct city business in an efficient, professional manner. A corollary of this was the development of public works systems, such as sewerage systems, throughout American cities in the late-nineteenth and early-twentieth centuries.

In the mid-nineteenth century, local governments enlarged their role and began to take responsibility for the health and safety of their citizens. One important issue that needed to be addressed was sanitation. Mayor Gerard Stith of New Orleans, whose administration began in 1858, courageously adopted a policy which stated that the city government was responsible for the health of its citizens. This was the first time in the city's history that its government had undertaken such a duty. Officials could no longer ignore New Orleans' sewage and drainage problems. However, they were as yet unable to

design and build adequate facilities to solve these problems.

Technology brought many municipal improvements to the lives of New Orleanians during the late-nineteenth and early-twentieth century. Telephones were introduced into the city in 1879, electricity in 1882, and electric streetcars in 1893. The New Orleans Sewerage and Water Board was established in 1899. Within a decade, it had upgraded the drainage system, constructed a sewerage system, and built the waterworks and purification plants.

Sewerage Pumping Station B was and is an integral component of this sewerage system. Sewage collected from the main sewers located between Lafayette Avenue and the Barracks was pumped to Station B which forced it through a force main on Jourdan Avenue into the Mississippi River. This station was built by W. M. Wren and Company. It was one of the first five above-ground pumping stations within the New Orleans system to be constructed. As such, it is clearly associated with events that made a significant contribution to the broad pattern of our history.

Levels of Significance

In terms of architecture, Sewerage Station B is significant at the local level. It represents an early New Orleans example of the Mediterranean style. Also, it represents an example of a type developed by J.W. Armstrong for the Sewerage and Water Board.

In terms of engineering, Station B is significant at the local level because it is one of the three original outfall stations in the New Orleans sewerage system. As such, it was and is an integral component of this engineering achievement. Similarly, the pumps within Station B are of local significance. It is possible that the pumps are also of national significance. Mr. G. Joseph Sullivan indicated that the Smithsonian Institute approached the Sewerage and Water Board about the possibility of obtaining one of the historic pumps in Station A, but determined that the weight of that pump was prohibitive.

In terms of association, Sewerage Station B is of local significance because it represents one of the original historic components of the New Orleans sewerage system. That system was responsible for dramatic

improvements in health, sanitation, and living conditions for the city.

CHAPTER 7
RECOMMENDATIONS

It is recommended in Chapter 6 that Station B should be considered eligible for inclusion in the National Register of Historic Places. For this reason, its destruction in the course of modifications to the Inner Harbor Navigation Canal (IHNC) would represent an adverse effect (Federal Register 34:2582, CFR 800.9). It is recommended then, that the New Orleans District Corps of Engineers seek ways to avoid this adverse effect (CFR 800.5).

Ideally, plans for modification of the IHNC should be designed so that physical destruction of Station B can be avoided. If destruction cannot be avoided, then it is recommended that the present structure, including the engineering mechanisms which it houses, be moved to a new location in the same area and be re-assembled in such a way that the station retains its historic integrity. Ideally, this would include restoration of the original roofing, window, and door treatments.

If avoidance or relocation of Sewerage Pumping Station B is not possible, then Historic American Building Survey (HABS) and Historic American Engineering Record (HAER) documentation should be prepared. It is recommended that the appropriate level of documentation is Documentation Level II. Content would therefore include:

(1) Drawings: select existing drawings, where available, should be photographed with large-format negatives or photographically reproduced on mylar.

(2) Photographs: photographs with large-format negatives of exterior and interior views, or historic views, where available.

(3) Written data: history and description (Federal Register 1983, v. 48(190):44732).

Definitions for these forms are provided in the Federal Register 1983:44731). More complete instructions are provided in the manuals for HABS and HAER documentation published by the National Park Service.

Special treatment of the pumps within Station B may be warranted. Ideally, these pumps would be moved to the new location of Station B, and remain in service.

If this is possible, then no further treatment is necessary. If the pumps are retired, however, it is recommended that one of the original pumps and one of the Wood Trash Pumps be donated to an appropriate curatorial facility.

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APPENDIX A
REVIEW OF DRAFT REPORT
BY G. JOSEPH SULLIVAN,
GENERAL SUPERINTENDENT OF THE SEWERAGE AND WATER BOARD
OF NEW ORLEANS

Sewerage & Water Board OF NEW ORLEANS

G. JOSEPH SULLIVAN
General Superintendent

625 ST. JOSEPH STREET
NEW ORLEANS, LA., 70165 · 585-2365

October 24, 1991

Mr. R. H. Schroeder, Jr.
Chief, Planning Division
New Orleans District
Corps of Engineers
Post Office Box 60267
New Orleans, LA 70160-0267

Re: **Draft Report Comments**
Sewage Pumping Station B

Dear Mr. Schroeder:

The draft report was quite good and provided an interesting insight into the early days of the Sewerage and Water Board and the development of the sewerage system. Except for what appears to be a sentence out of place on Page 15, suggested correction attached, and the inconsistent use of "sewage" and "sewerage" as it relates to the name of a station; i.e. Sewage Pumping Station B, we think the report was excellent.

I look forward to the final version and believe it will be a fine addition to the Board's library of information.

Yours very truly,

G. Joseph Sullivan
General Superintendent

GJS/LGB/pmt
Attachment
cc: Harold J. Gorman
330G+

APPENDIX B
REVIEW OF DRAFT REPORT
BY ERIC N. DELONY
CHIEF AND PRINCIPAL ARCHITECT
HISTORIC AMERICAN ENGINEERING RECORD

United States Department of the Interior

NATIONAL PARK SERVICE
P.O. BOX 37127
WASHINGTON, D.C. 20013-7127

IN REPLY REFER TO:
(H40(429)

November 6, 1991

Mr. R.H. Schroeder, Jr.
Chief, Planning Division
Department of the Army
New Orleans District, Corps of Engineers
PO Box 60267
New Orleans, Louisiana 70160 - 1267

Dear Mr. Schroeder:

Thanks for sending me a copy of the report "National Register Evaluation of Sewerage Pumping Station B, New Orleans, Louisiana." The bibliography and background information will be valuable references should future work materialize on the city's sewerage and water supply systems. The architectural description is complete and accurate. The Wood pumps are, in my opinion, the heart of the station and probably, the most significant single artifact of the entire system. Though beyond the scope of this project, more information on these mechanical devices would be required to meet Historic American Engineering Record(HAER) documentation standards.

The problem with documenting a single feature of an extensive system such as sewage collection and treatment is context. How was this single facility linked and related to the other pumping stations? Without drawings, maps and other interpretive diagrams that provide a visual impression of the scope and extent of the entire process, it is difficult to understand the context of this single site. Nonetheless, the case for the site's National Register eligibility is clearly made and recommendations for its preservation are well founded.

New Orleans is unique in its topography and physical attributes. Consequently, the infrastructure that serves the city and keeps it functioning is unique and of great historical and engineering interest. I have met with Chief Engineer Joseph Sullivan and discussed the concept of documenting the city's drainage and sewerage system for the HAER collection at the Library of Congress. Should the opportunity arise where the Corps could support such an effort, I would sincerely appreciate the opportunity to discuss this with you further.

Sincerely,

Eric N. DeLony

Eric N. DeLony
Chief & Principal Architect
Historic American Engineering Record